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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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The Anglo-German Agreement "Off"

A RUMOUR is current in chemical circles usually well-informed that the Anglo-German chemical agreement about which so much has lately been heard may be regarded as "off." It is worth noting that most of the reports concerning it have come from Germany, which of late has been active in letting this country know of what is being done there in connection with fuel research and technology and other subjects. The reports as to a coming European chemical compact have been so persistent as to lead many people in this country to assume their accuracy, and to cause in America considerable concern. So far as we can learn, there has really been very little in these reports; conversations there have been and no doubt will be again. Nothing but good can result from them. They may lead to practical understandings on many points, and in any case lead to a better understanding of opposite points of view. But beyond this, whether as regards the dye industry or the chemical industry in general, there is no prospect, so far as our present information goes, of any definite agreement or combine between British and German chemical interests.

In some mysterious way the idea of an Anglo-German chemical combine has become associated with the

formation of Imperial Chemical Industries, Ltd. This, perhaps, is the aspect that has most disturbed America, for it seemed to indicate a threatened closing both of Europe and of the British Empire against American chemical competition. It is difficult to find any specific ground for the impression in any of the official statements made on behalf of I.C.I. The many speeches by Sir Alfred Mond on the subject have been clear and consistent in their insistence on an Imperial mission. The title adopted emphasised this. All the subsequent explanations of policy have corresponded with the fundamental idea that British chemistry should provide for the chemical needs of the British Empire. Neither Germany nor the United States can have any reasonable grievance, for their own national industries are founded on a similar principle.

That the Germans have given up the idea at least of a dyestuffs agreement seems clear from the views expressed in the *Deutsche Färber-Zeitung*. That journal has perhaps given too much importance to some recent articles in a London newspaper which in the past has been recognised as the authentic spokesman of the retired colonel class. It resents to some extent the suggestion that the Germans are to blame for the failure to reach an agreement. No British chemist of any eminence, so far as we know, has ever made the suggestion. But the *Deutsche Färber-Zeitung* is quite right in stating that in the negotiations, which have dragged on over several years, the British point of view has undergone changes until at last it is clearly defined in the I.C.I. attitude. Such changes were inevitable, with the changes that actually took place in the organisation of the British dyestuff industry. Sir Alfred Mond's vision of the Empire as the natural market for British chemical industry is regarded as cutting German industry out of the Dominions, Crown Colonies, Dependencies, Mandated Territories, etc., and as forcing these to become customers of British industry, and German opinion appears to think Sir Alfred responsible for the absence of a favourable development of the negotiations.

Frankly, the German journal gives up any hope of the impending formation of a chemical trust. "Discussions," it states, "with the British in various directions have certainly taken place. Recently, reports of the formation of a Franco-German chemical trust have again gained currency, reports which are obviously contrary to the facts. With the French chemical industry, negotiations have taken place only in regard to arrangements for the sale of individual articles, and in part they have led to a definite result; other combination plans have not been considered. In this connection we may draw special attention to the unequivocal declaration of Herr von Weinberg at the chemical meeting at Frankfurt."

Submerged Flame Combustion

THE conference of the Institution of Chemical Engineers, which is being held as we go to press, promises to be a notable one, and to maintain the high standard of previous deliberations. There was a good attendance on Wednesday evening, when Mr. Norman Swindin summarised his paper on "Submerged Flame Combustion." Development of the submerged fuel burners has been retarded by reason of the absurd claims that have been made in respect of their efficiency. Mr. Swindin described the practical attempts made to burn fuels in enclosed inert atmospheres. The work of Collier, Brunler (first attempt), Scholten and Villeneuve, Smethurst, Hauptmann, and Evans and Brunler (1911) was referred to.

The latest Brunler burner is apparently designed to burn fuel oils in a very simple apparatus, consisting of a steel casing in which a passage is divided by a water-cooled bridge piece, wherein two streams join together to form a nozzle. The bridge piece is cored, so that when the burner is submerged, water can pass through for cooling purposes. A feature of this burner is the increase in area of the passage towards the nozzle. A development of special interest to chemists and chemical engineers, in the use of gas for industrial heating purposes, lies in the process of submerged combustion as conducted by Featherstone Hammond Partners, to which Mr. Swindin directed attention. The flame of a mixture of gas and air, in proper proportions, and under pressure, is submerged in the liquid which it is desired to evaporate, or merely to keep in molten condition. Although, as Mr. Swindin remarked, the apparatus at first glance appeared to be of elaborate construction, so much care had been devoted to its design that virtually it possessed all the elements of simplicity.

The application of submerged flame combustion is of peculiar interest, and has been the subject of reference in these columns before. Where direct heating is at present employed, as in the Porion evaporator, the Kessler and Gaillard concentrators, and indirect heating in plants of the multiple-effect evaporator type, it is stated that little advantage is to be obtained by adopting this type of burner. But it must be recalled that the chemical industry abounds in heating problems, such, for example, as the concentration of weak solutions of sulphuric and nitric acid, crystallisation of ammonium chloride, concentration of caustic soda, and heating problems of acid processes generally, where efficiency is not the first consideration. It is here that submerged combustion will find its real application, as, for example, in the colour, dye and artificial silk industries. Heating highly viscous solutions has always proved a difficult problem. Submerged combustion, however, with the aid of the air-lift, enables these solutions to be heated at a much greater rate, having regard to the vigorous circulation set up by the escaping gases.

It is impossible to touch on all the points referred to by Mr. Swindin, but his paper will well repay careful study, particularly so far as simple heating, heating of liquids and evaporation out of contact with the gases, and heating in fragile vessels, are concerned. No less valuable was his contribution to the subject of the entropy of a steam-gas mixture.

An Advance in Automatic Control

A COMMUNICATION of exceptional interest was made to the London Section of the Society of Chemical Industry by Dr. H. S. Hatfield on Monday. Dr. Hatfield has devised an apparatus which is, for the time being, devoted to the automatic control of water-softening plants, based on automatic determination of the hardness of water. On this account alone, of course, Dr. Hatfield's apparatus (which was demonstrated to the audience) is certain to obtain the most careful consideration. It has received attention from a firm of water-softening engineers, and it was quite clear from what was said in the discussion of the paper that an apparatus of such a nature would be widely adopted. As the inventor pointed out, however, the possibilities of his apparatus are not restricted to water-softening plant. With suitable modification apparatus of this type could be used for the automatic execution of a variety of control tests (such as titrations) which are at present laboriously carried out by human agency.

There is no doubt that Dr. Hatfield's ideas caught the imagination of his audience. Until there have been opportunities for careful and rigorous tests, chemists will naturally refrain from pronouncing judgment on the capabilities of the apparatus. But of the advance marked by Dr. Hatfield's outline of his conceptions there was no question. Speaker after speaker in the discussion rose, not merely to utter criticism, but to indicate his interest in the matter by suggesting that the apparatus should be modified so as to deal with his own particular problems! This is the greatest tribute that can be paid by one chemist to another. Among the possible applications of automatic control were mentioned froth flotation, certain operations in the beet sugar industry, and the analytical control of certain metallurgical processes, to name but three. Those who were present at the meeting will look forward with the keenest interest to future developments.

The Alkali Works Order

THE draft order (the Alkali, etc., Works Order, 1927) just issued by the Minister of Health, is an interesting commentary, firstly, on the manner in which the chemical industry has extended its activities; and, secondly, on the heed of the powers that be for the public good. The draft order indicates a number of alterations which the Minister of Health (under the Public Health (Smoke Abatement) Act, 1926) proposes to make in the Alkali, etc., Works Regulation Act of 1906. The list of "noxious or offensive gases" in the latter Act is to be extended by the addition of sulphur trioxide, sulphur dioxide (except that arising solely from the combustion of coal), bromine and iodine and their acid compounds, arsenic and its compounds, ammonia, pyridine, and fumes from benzene and paraffin oil works. The descriptions of certain works scheduled in the Act of 1906 are considerably extended, these including nitric acid works, arsenic works, paraffin oil works, bisulphite works, and tar works; and the list of works in the 1906 Act is extended by the addition of benzene works (that is, works, not being tar works as defined in the order, in

which any wash oil used for the scrubbing of coal gas is distilled, or in which any crude benzol is distilled), pyridine works, bromine works, and hydrofluoric acid works.

The Public Health (Smoke Abatement) Act of 1926 provides that the Minister of Health may, after a public inquiry and after consultation with any local authorities or other interests concerned, make such orders as the one now put forward in draft form. The order is not to come into force until April 1, 1928, and the necessary inquiry is to be held at the Ministry of Health on Wednesday next (December 14), by Dr. T. L. Bailey, the Chief Alkali Inspector, who will hear the evidence of interested persons. It is quite certain that any representations made by manufacturers and others will receive the most careful attention, and that the order, if and when confirmed, will be worked in such a manner as to protect the public from injury without putting undue or irksome obstacles in the path of the industry. In this respect the public has every reason to be grateful to the Government department concerned. The immense growth and development of chemistry in the last few years has brought in its train many risks from new poisonous compounds, and from old ones now used for the first time on the grand scale. The dangers of lead tetraethyl are a case in point, and it is of interest, as reflecting the position in the United States, that Messrs. Henderson and Haggard, authors of the recent book in the American Chemical Monograph Series on "Noxious Gases," give it as their view that prior to the use, on an industrial scale, of new compounds, they should be carefully investigated from the physiological point of view in order that all possible risks may be avoided.

"The Profession of Chemistry"

THE celebration next week of the jubilee of the Institute of Chemistry makes peculiarly appropriate the issue of a new edition of *The Profession of Chemistry*, an invaluable work written by the Registrar, Mr. R. B. Pilcher, and first published in 1919. As Professor Arthur Smithells states in an introduction, the work is issued to meet a constant demand for information about the profession. The first edition being exhausted, the author asked the Council of the Institute to accept the copyright of the book and undertook to revise it, under the supervision of the Publications Committee, in order that it might find a place among the official publications of the Institute. There is no profession, as Professor Smithells rightly observes, which more needs explaining than chemistry. Like most others, even more than several, it is overcrowded with aspirants and the worldly prospects are poor for those not well equipped. He emphasises the point that it is in the main an employed profession; very few of its members are independent practitioners, and the majority do not occupy high positions of control. Yet it demands brains of a high order, hard work, and considerable sacrifice.

In these circumstances, it is clearly desirable that the public should be provided with an authoritative guide in which they may find information clearly set forth on the subject of a chemical career; and for knowledge of the subject, sound judgment, regard for the pro-

fession, and a desire to serve those engaged in it, a better authority than Mr. Pilcher could hardly be found. The work covers the ground very thoroughly, and combines sound knowledge clearly stated with excellent counsel where advice or opinion is called for. It has become the standard handbook on the subject and is by no means the least of the many services Mr. Pilcher has rendered to chemistry.

The Calendar

Dec.		
12	Institute of Chemistry (Manchester Section): Address by L. G. Radcliffe, followed by a Dinner and Dance.	Manchester Limited, Royal Exchange Buildings, Manchester.
12	Ceramic Society: "The Combustion of Carbonic Oxide." Professor W. A. Bone. 7.30 p.m.	North Staffordshire Technical College, Stoke-on-Trent.
12	Institute of Metals (Scottish Section): "Age Hardening of Alloys." Dr. Robert Hay. 7.30 p.m.	39, Elmbank Crescent, Glasgow.
13	Hull Chemical and Engineering Society: "Steel—its Structure and Tempering." C. C. Hall. 7.45 p.m.	Grey Street, Hull.
13	Royal Photographic Society: Scientific and Technical Group. 7 p.m.	London.
13	Institution of Petroleum Technologists. "Detonation in Motor Fuels." H. R. Ricardo. 5.30 p.m.	Royal Society of Arts, John Street, Adelphi, London.
13	Royal Institution of Great Britain: "A Year's Work in X-Ray Crystal Analysis." Sir William Bragg. 5.15 p.m.	21, Albemarle Street, London.
13	Society of Chemical Industry (South Wales Section): "Notes on Coal Research." Dr. S. R. Illingworth. 7.30 p.m.	Technical College, Cardiff.
13-16	First International Conference on Light and Heat in Medicine, Surgery, and Hygiene.	Central Hall, Westminster, London.
14	Institute of Chemistry. Jubilee Celebrations. Conversazione. 8 p.m.	Wharnclyfe Rooms, Hotel Gt. Central, Marylebone, L'dn.
14	Manchester Metallurgical Society: "Practical Metallography." Discussion introduced by G. Mohn. 7 p.m.	Engineers' Club, Albert Square, Manchester.
14	Society of Glass Technology.	University College, Gower Street, L'dn.
14	Society of Chemical Industry, Society of Dyers and Colourists, Textile Institute, Bradford Textile Society, Bradford Engineering Society: "Low Temperature Carbonisation." H. P. Hird. 7.30 p.m.	Hall of the Mechanics Institute, Bradford.
15	Institute of Metals (Birmingham Section): "Duralumin." L. Aitchison. 7 p.m.	Engineers' Club, Waterloo Street, Birmingham.
15	Institute Jubilee Dinner. 7 for 7.30 p.m.	Wharnclyfe Rooms, Hotel Gt. Central, Marylebone, L'dn.
15	Society of Dyers and Colourists (Midlands Section): "Hydrogen Peroxide Bleaching." I. E. Weber. 7.30 p.m.	Leicester Technical College.
15	Society of Dyers and Colourists (West Riding Section): "Leather Dyeing." H. Salt.	Midland Hotel, Bradford.
15	Royal Institution of Great Britain: "Petroleum Natural Gases and Their Derivatives." James Kewley. 5.15 p.m.	21, Albemarle Street, London.
16	Society of Chemical Industry (Liverpool Section): Joint meeting with the Chemical Engineering Group: "Oil Pollution of Seas and Harbours—and a Remedy." C. S. Garland. 6 p.m.	University, Liverpool.
21	Society of Chemical Industry (Glasgow Section): The Ramsay Chemical Dinner. 7 p.m.	The Trades House, Glasgow.

The Theory and Practice of Submerged Flame Combustion

Mr. Norman Swindin's Paper at the Chemical Engineering Conference

A conference was held on Wednesday, Thursday, and Friday of this week by the Institution of Chemical Engineers, at Burlington House, London. We give below some notes on the paper read on Wednesday by Mr. Norman Swindin on "Submerged Flame Combustion," and of the subsequent discussion.

MR. SWINDIN stated that, in the light of our present knowledge of flames and combustion, it was comparatively easy to make a flame of any combustible substance burn in any atmosphere and liquid, but to make a saleable article, the burner must be robust, simple, and foolproof. He outlined the conditions under which steady combustion took place beneath a liquid as follows:—

- (1) The fuel must be liquid, gaseous, or sufficiently divided if a solid, so that it could flow or be blown through small orifices and pipes.
- (2) The air or oxygen-containing gas must be carefully controlled to form a constant combustible mixture.
- (3) The fuel and the air must be thoroughly mixed and passed through a tube of such a size that the velocity of flow was greater than that of the rate of propagation of flame which depended on the composition of the gas; it was usually 3 ft. per second.
- (4) The combustible mixture was to be burnt in contact with a hot spot or incandescent surface in order to increase the rate and ensure completeness of combustion and to keep the flame alight.
- (5) The burner chamber was to be of such construction and made of such materials that a constant temperature of the walls was maintained below that of fusion of the lining, and so high as not to cool a portion of the gas below its combustion temperature.
- (6) The burner was to be used in such a way that the products of combustion did not affect the vessels and plant and the substances being evaporated.
- (7) The working pressure was to be adjusted so that the partial pressure of the steam did not unduly lose the heat.

From the point of view of the above considerations, Mr. Swindin analysed the various burner designs which had been proposed from time to time. He discussed among other things the burners of Collier, Scholten and Villeneuve, the Brunlers (senior and junior), Smethurst, Hauptmann, and Evans. Among the latest furnaces were those of Brunler and Mackay, the Chemical and Metallurgical Corporation, Ltd., and Featherstone Hammond Partners, Ltd.

A Recent Type of Furnace

That developed by the Chemical and Metallurgical Corporation, Ltd., was for the Elmore process for the treatment of complex sulphide ores in which brine containing 10 per cent. of hydrochloric acid was the reagent. At one stage the liquors had to be heated to the boiling point, 105° C., but owing to the corrosive nature of this liquor it was found exceedingly difficult to reach boiling point without dilution and evaporation. It was decided to adopt a submerged flame burner, which was designed from first principles and without reference to any earlier work which had been done on the subject. Little difficulty was experienced in making a suitable burner to be used with water, but difficulties arose when acid brine had to be heated. Having already developed the use of uncured rubber as a lining for tanks, the company found that this was a suitable material to cover the exterior of the burner. Another difficulty arose from the lowering of the fusion point of the refractory, caused by sodium salts creeping up the nozzle into the combustion chamber.

The final form of burner consisted of a combustion chamber formed of rings of refractory material divided into two parts, the upper of which constituted the mixing chamber. The exterior of the burner was kept cool by water jackets. The lighting was performed by a torch constructed on the lines of a simple submerged flame burner which was passed through the gas inlet pipe into the mixing chamber. This burner was fairly satisfactory and consumed about 4,500 cu. ft. of gas per hour.

Mr. Swindin also dealt in great detail with the submerged flame burner designed by Featherstone Hammond Partners, Ltd.

A number of other points arose for consideration. It was best, in order to prevent corrosion of metal parts, to use fuel

comparatively free from sulphur. A very important element in the design of a burner was the high velocity tube, on which depended the impossibility of backfire. It was essential that the fuel be supplied at all times with the necessary quantity of air, and various valves had been designed for the purpose.

Use of Submerged Flame-burner in Industry

Large claims were made concerning the high efficiency of the burner, but although from 96 per cent. and upwards of the heat could be absorbed, there was always the cost of compression to be allowed for. Where direct heating was at present employed, as in the Porion evaporator, the Kessler and Gaillard concentrators, and indirect heating in plants of the multiple effect evaporator type, little advantage was to be obtained by adopting this type of burner.

The chemical industry, however, abounded in heating problems, such as concentration of sulphuric and nitric acid solution, crystallisation of ammonium chloride, concentration of caustic soda, and the heating problems of acid processes generally, where efficiency was not the first consideration. Here submerged combustion would find its first real application, perhaps, in the colour, dye, and artificial silk industries. Heating highly viscous solutions had always proved a difficult problem, but the submerged combustion combined with the air lift enabled these solutions to be heated at a much greater rate, because of the violent circulation set up by the escaping gases. Further, chemical operations of oxidation and reduction either by suitable adjustments of the gas and air, or by passing oxidising substances such as bromine through the burner, would be combined with this internal heating and stirring.

In his remarks introducing the paper to the Institution, Mr. Swindin stated that the submerged flame method could be used for the production of pure steam by transmitting the heat through molten lead. The submerged flame method also provided the best means of combined heating and stirring, and hence was worthy of special attention in regard to mixing and circulating systems. Moreover, by introducing oxidising and reducing gases it was possible to effect chemical changes while heating. An important advantage of submerged flame burners was their small size. One of the difficulties was that the temperature approached the melting point of platinum, and hence it was hard to get suitable refractories, though alundum was quite useful.

Discussion

Mr. J. A. Reavell (vice-president) congratulated the author on the admirable way in which he had presented the subject. As regards the practical applications of the method, it seemed attractive for evaporation, but he thought it was not at present of universal application in the chemical industry, since the products of combustion, as well as the heat, must be brought into the system. It seemed to have great possibilities for the purpose of raising steam (especially low-grade steam), but he pointed out that it produced steam plus various gaseous products, which introduced difficult problems. Even if the molten lead modification were introduced, there were still limitations to the method. He thought there was much in the submerged flame method in a limited field, in which, however, it might be unrivalled.

Dr. W. R. Ormandy said the method presented great possibilities, especially as regards the evaporation of liquids forming slimy, non-conducting scales. As regards the history of the Brunler burner, he stated that it was only in the last nine months that Mr. Brunler, Jun., had been able to get his father's papers back from the Belgian Government. As regards the very high evaporative efficiency which had been attributed to the Brunler burner, a burner was being built in this country, and the claims made for it would be thoroughly tested.

Mr. Brunler, Jun., was present at the meeting, and at the request of the president, Sir Alexander Gibb, who was in the chair, made a contribution to the discussion.

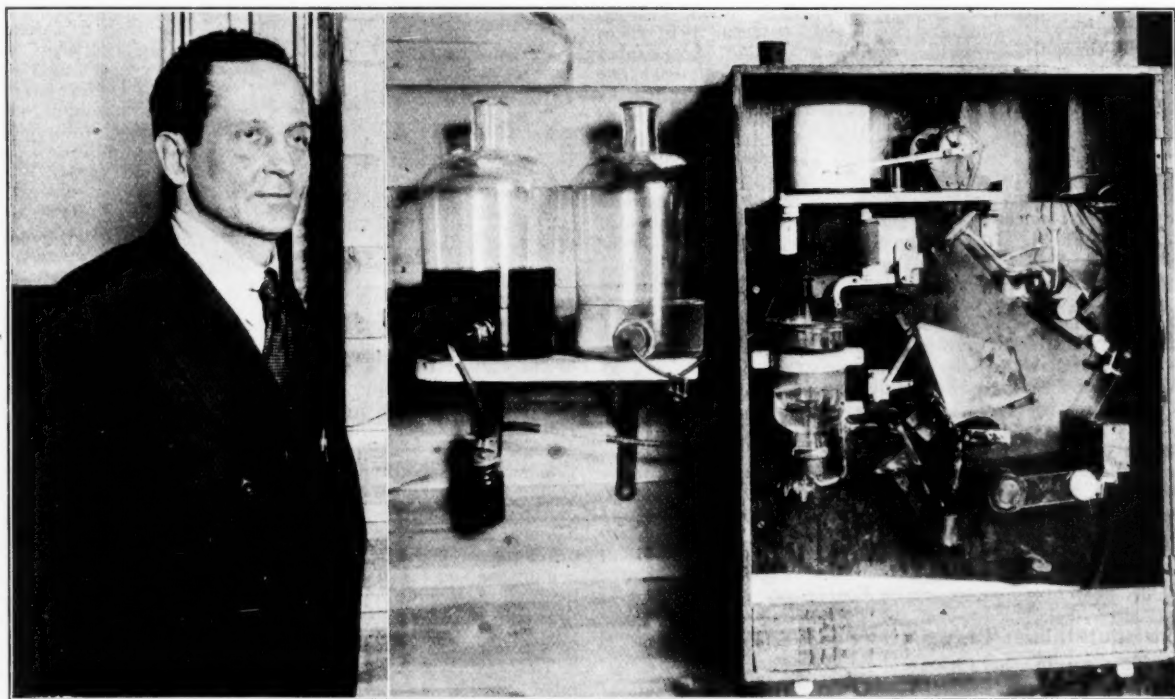
Automatic Analysis and Control of Water-Softening

Dr. Hatfield's Paper Before the Society of Chemical Industry

At a meeting of the London Section of the Society of Chemical Industry held at Burlington House, London, on Monday, Dr. H. S. Hatfield described and demonstrated an instrument for automatically titrating a measured volume of a liquid with a standard reagent, recording the result and repeating the operation indefinitely.

Dr. Hatfield said the automatic chemical analysis of liquids has only recently attracted the attention of instrument makers in spite of the fact that corresponding instruments for furnace gases have long been in use. In recent years, technical instruments for the automatic recording of p_H values and control of technical processes by such means had been described in America, but so far as he was aware they had not yet found their way into this country. The only practical case known to him in this country of automatic liquid analysis, was the recently introduced apparatus for automatically determining the amount of oxygen in boiler feed water.

titrating the water leaving a plant, and causing the apparatus to give a signal, or effect a change-over of some kind, when the hardness of the effluent water exceeded a certain degree. This method was more particularly applicable to base-exchange softening, and there was no suggestion of applying apparatus of this kind to the effluent of a lime-soda plant. The author demonstrated the apparatus and showed how it would take repeated tests of the hardness of water and record the results. The apparatus has been under test for some time at the Brentford works of United Water Softeners, Ltd., and satisfaction has been expressed with the results. This apparatus should be susceptible of other applications besides the treatment of water, because any titration which could be carried out potentiometrically could be carried out automatically and repeatedly, with a pen and ink record of each result. It had surprised him to find that this idea of automatic titration appeared to be novel, but application should be found for it



THE NEW APPARATUS AND ITS INVENTOR

He had been led to develop this apparatus, said Dr. Hatfield, through a case particularly adaptable to it, *e.g.*, the titration of hard water with standard soap solution, the well known Clark's test. Whereas the end point in the laboratory was determined by the formation of a permanent lather on shaking, the end point in his apparatus was determined by blowing a stream of air through the water under test, with gradual addition of soap solution. When excess of the lather was attained, a copious mass of froth was formed which overflowed the edge of the vessel. The stream of air also served to stir the liquid during the addition of soap solution. The rate at which the tests were taken could be regulated electrically and the results of the tests were also permanently recorded automatically.

Control of Water Softening Plants

Dr. Hatfield pointed out that apparatus of this kind could be applied to the control of water softening plants in two ways. In the first, the water, before entering the plant, was automatically tested for hardness, and the amount of softening chemical added was automatically adjusted to the correct amount. The second method consisted in automatically

in many industries where liquors require to be automatically controlled analytically. Such a development was in direct line with modern technical progress, in which there was a tendency towards elimination, as far as possible, of the human element, but keeping the human element up to the scratch by an independent record of performance.

Discussion

Dr. E. B. Higgins (of United Water Softeners, Ltd.) said the experiments with this apparatus had been going on at the Brentford works of his firm for eighteen months, and although the apparatus looked a little complicated, it was not, in fact, so delicate a machine as it looked. Its great advantage was that it carried out hundreds of titrations continuously, and recorded the results, and so took this soulless work out of the hands of a laboratory assistant.

Dr. W. Cullen said that the apparatus clearly meant the displacement of a great many assistants in a works, although the work was usually done by what might be called skilled labourers. It occurred to him that the apparatus might be adapted to actual froth flotation processes, and also to the control of the alkalinity and the amount of cyanide in those huge operations on the Rand.

The Institute Jubilee

Details of the Celebration Arrangements

THE arrangements for the jubilee celebration of the Institute of Chemistry are well in hand. The occasion will afford an exceptional opportunity for the reunion of old friends from all parts of the country. Representatives of many professional and scientific societies and institutions, and of the local sections of the Institute, will be present. The members of the committee of the London and South Eastern Counties Section will act as stewards. Over 1,250 guests are expected at the conversazione to be held at the Wharnclyffe Rooms on the evening of Wednesday, December 14. Members of the Institute and of allied chemical societies and institutions who have accepted the invitation extended to them by the president and council and who have received tickets are asked to note that the president and Mrs. Smithells and the council of the Institute will receive them from 7.30 p.m. Over 1,000 tickets have been issued for seeing the films illustrating British industry which will be shown by the courtesy of the Federation of British Industries and the Gaumont Co. at the New Gallery Cinema, 123, Regent Street, London, on Thursday, December 15, from 10.30 a.m. to 12.30 p.m. Ticket holders will be admitted from 10 a.m., and are advised to be in their places in good time.

A large and distinguished company is expected at the jubilee dinner which is to be held at the Wharnclyffe Rooms on December 15, at 7 for 7.30 p.m. Guests are advised to arrive in good time. Sir Alfred Mond will propose the toast of the evening. On Wednesday and Thursday, December 14 and 15, at the Institute's headquarters, 30, Russell Square, London, documents and portraits of historical interest, particularly in connection with the foundation of the Institute, will be exhibited. In addition, Mr. George H. Gabb has kindly promised to lend a number of very interesting documents and apparatus relating to Joseph Priestley; Mr. Cecil H. Cribb has kindly promised to lend a selection of prints and other exhibits of interest to chemists; and the Institute's collection of lantern slides, illustrating the history of chemistry, will be displayed. On Thursday, December 15, the Master and Wardens of the Worshipful Company of Salters, in honour of the occasion, will entertain to luncheon, at Salters' Hall, the president, officers and council of the Institute and the representatives of many societies and institutions.

The Leeds and Huddersfield Local Sections of the Institute celebrated the forthcoming jubilee by a dinner held at Leeds on Friday, December 2. Professor J. F. Thorpe, vice-president, attended on behalf of the Institute, while Mr. F. H. Carr was also a guest.

Dispute about Disposal of Surplus War Drugs

ON Tuesday in the Chancery Division, Royal Courts of Justice, London, Mr. Justice Russell had before him an action by Mr. W. H. Parry, a pharmacist, of Dudley Road, Finchley, against S. H. Travis and Co., wholesale chemists, of St. Pancras, for a declaration that a partnership or joint adventure was entered into between them for the acquisition and disposal of certain chemical and medical drugs and other goods. The defendants disputed the claim. The action arose out of the purchase and resale of war supplies in March, 1926. Plaintiff was employed during the war in the medical supply department at the War Office in connection with the disposal of surplus stocks, and he said he made an agreement with Mr. Sidney Travis, on behalf of the defendant firm, that the defendant firm should provide the capital for the purchase of the goods, plaintiff to supervise their sale, and that the profits of the enterprise should be divided in the proportion of 75 per cent. for the defendants and 25 per cent. for the plaintiff. Defendants denied that there was any partnership, or adventure between them and the plaintiff, and said the goods were bought for Mr. Travis and another, and that the plaintiff was to have 25 per cent. of the profits which the defendant firm made.

At the conclusion of a long hearing, his lordship, in reserving judgment, expressed the hope that the parties might arrive at a settlement of the litigation. If so and they would inform him, he would not give his judgment.

Resignation of Professor E. C. Williams

PROFESSOR E. C. WILLIAMS, who has held the Ramsay Memorial Chair of Chemical Engineering at University College, London, since 1923, has resigned in order to take up an important post in the Shell Oil group. His business will be the active development of the group's research organisation in California. Professor Williams, who was a distinguished graduate and scholar of the University of Manchester, was employed for five years by the British Dyestuffs Corporation,



PROFESSOR E. C. WILLIAMS.

and for one year as research chemist to the Joint Committee of the University of Leeds and the National Benzole Association. At University College, in temporary buildings, he has conducted courses of instruction in chemical engineering. His work has been remarkably successful, and abundant evidence is forthcoming of the advantages gained by students who have added to their ordinary university curriculum in chemical science a period of study in the Ramsay Department of Chemical Engineering. The measure of success achieved has encouraged the college to an immediate and considerable development of the department. A very strong and influential committee has been formed for the purpose of collecting a building and endowment fund, with Sir Alfred Mond as chairman, Sir R. Waley Cohen as vice-chairman, Sir David Milne Watson as honorary treasurer, and Sir Frank Heath as honorary secretary.

I.C.I. Acquires Cement Company

IT is understood that Synthetic Ammonia and Nitrates, Ltd., of Billingham-on-Tees (a member of Imperial Chemical Industries), have acquired the Casebourne Cement Co., Ltd., who carry on business as cement manufacturers at Haverton Hill. Although no details of the transaction are available at present, it is believed that it has been effected in order to secure to Synthetic Ammonia and Nitrates, Ltd., an outlet for their supplies of calcium carbonate. The Synthetic Ammonia and Nitrate works are engaged in the manufacture of synthetic fertilisers, and produce as a by-product considerable quantities of calcium carbonate, for which they must find an outlet. It is of very little value except for the purpose of manufacturing cement, and the purchase of the Casebourne Cement Co., Ltd., will provide Synthetic Ammonia and Nitrates, Ltd., with the means of turning these large quantities of calcium carbonate to profitable use. The Casebourne Cement Co. was founded by the late Mr. Charles Casebourne, a civil engineer, who originally commenced the business of cement manufacturer at Longhill, West Hartlepool. About 20 years ago the works were transferred to Haverton Hill, which with its river frontage provided the undertaking with excellent water transport facilities.

The Alkyl Resorcinol Action

Appeal against the Decision of Mr. Justice Astbury

THE appeal by the plaintiffs, Sharpe and Dohme, Inc., against the decision of Mr. Justice Astbury in their action against Boots' Pure Drug Co., Ltd., was commenced on Tuesday, before the Master of the Rolls (Lord Hanworth), with Lord Justices Sargant and Lawrence. The case was reported in our columns during June and July of this year. It will be remembered that the patent in regard to which the dispute arose was for "Improvements in or relating to the Manufacture of Alkyl Resorcinols," the patented process being the condensation of the appropriate fatty acid with resorcinol and the reduction of the resulting ketone to the required alkyl resorcinol. The decision against which appeal is being made said that the patent was not for new antiseptics, as such, but for new chemical substances which were stated to be antiseptics, that the method by which they were made was absolutely obvious in view of the state of chemical knowledge, that one of the claimed bodies had been previously made by the patented process, that the preparation and properties of the others had been clearly foretold in prior published documents, and that every claim of the patent was invalid. There would have been no question that the patent would have been infringed if it were valid.

Counsel for the appellants were Sir Arthur Colefax, K.C., the Hon. Stafford Cripps, K.C., and Mr. L. F. Heald; and for the respondents Mr. J. Whitehead, K.C., Mr. R. Kenneth Swan, and Mr. G. S. W. Marlow.

Opening of the Appeal

Sir Arthur Colefax, in opening his case, emphasised his view that the patent was concerned with new and valuable therapeutic agents; he would argue that all the claims were valid, but if the court were not with him he availed himself of Section 32 of the Patents and Designs Act 1919, which required the court to grant relief in respect of such claims as were in fact valid, and he maintained that some, at least, of the claims were valid and one or more were infringed. He referred to Section 38A of the Act, which required that a chemical substance, or a substance to be used in medicine (and the patent was concerned with both), should only be claimed in conjunction with a process. Mr. Justice Astbury had, as he thought wrongly, taken the view that there cannot be a valid patent for such substances unless, apart from the novelty of the substance, there were ingenuity and invention in the method of production. The attitude of the judge with regard to the prior documents was: "They tell one, if the reaction is capable of taking effect, how to proceed to obtain the bodies." This attitude showed complete absence of appreciation of the distinction between established fact and intelligent anticipation; it was only upon established fact that progress was made.

With regard to the suggestion that the patent was not for therapeutic substances, Sir Arthur was not aware that a patent could be obtained for a chemical substance apart from some useful properties; the substances in question were first described and claimed, and then their therapeutic properties were also described and claimed.

The Chemical Principles Involved

Sir Arthur then proceeded to instruct the court in the chemical principles involved in the case, illustrating his remarks by a set of lecture models depicting atoms of carbon, hydrogen, and oxygen. This continued during part of Wednesday and Thursday. Sir Arthur lost no opportunity of emphasising the complexity of the reactions, and he made much of the suggestion of Professor Gray, in the court below, that in the condensation process the acyl residue first attaches itself to the hydroxyl group in resorcinol and subsequently wanders into the nucleus.

The case looks likely to occupy the attention of the court for the rest of the term, although Sir Arthur suggested the possibility of shortening the proceedings by arguing first the question whether the judgment was not wrong in law as opposed to fact.

FERTILISER IMPORTS INTO HAWAII in 1926 amounted to \$4,600,000 worth from the United States, and to \$2,500,000 worth from other sources. British South Africa and British East Africa each purchased about £20,000 worth of fertilisers from the United States.

Professor Bone on High Pressure Research

Some Remarkable Apparatus

IN the course of his address to the Chemical Society of London on "Gaseous Combustion at High Pressures," Professor W. A. Bone described and illustrated bombs and other apparatus now in use at the Imperial College; the spherical bombs are capable of withstanding explosion pressures up to 2,000 atmospheres, and a cylindrical one withstands explosion pressures of 1,200 atmospheres. The latter can be fitted with quartz windows for spectrographic work, and may then be used up to 500 atmospheres. The behaviour of theoretical hydrogen-air and carbon monoxide-air mixtures is in striking contrast; the pressure in the former rises in about 0.005 second to 400 atmospheres (maximum), then immediately beginning to fall, whereas in the latter the pressure takes 0.18 second to reach 410 atmospheres (maximum), and begins to fall only after a considerable interval. The replacement by hydrogen of a very small proportion of the carbon monoxide enormously accelerates the pressure rise in explosions in gases initially at 50 atmospheres.

Professor Bone also described experiments leading to the recognition of the phenomenon of nitrogen "activation," and dealt with the consequent secondary production of nitric oxide in the presence of excess oxygen. The spectrographic evidence shows that steam does not function chemically, but that carbon monoxide reacts directly with oxygen in carbon monoxide-air explosions, that the radiation emitted in such direct interactions is strongly absorbed by either carbon monoxide or nitrogen, and that in a carbon monoxide-air (excess) explosion at 25 atmospheres initial pressure, no nitric oxide is formed during the actual explosion period, although more than 2.5 per cent. of nitrogen dioxide may be found in the cooled final explosion products.

Manufacture of Synthetic Rubber not yet in Sight

Commercially

THE impression gained from reports of the speech recently made in Frankfurt by Dr. H. von Weinberg, of the I.G. Farbenindustrie, that the successful manufacture of synthetic rubber is in sight, is discounted by the translation received by the Department of Overseas Trade from the British Consul-General at Frankfurt of the pertinent passage in the speech. This reads: "Through contact synthesis we shall further succeed in extracting by a more convenient method the raw materials for the synthesis of rubber and gutta-percha." In another translation made at the Consulate-General in Cologne from a report, the end of the sentence reads, "to produce the elements for the synthesis of rubber and gutta-percha." The only interpretation possible, the Department of Overseas Trade points out, is that the combine with which Dr. Weinberg is connected has become satisfied with the progress made in its investigations towards the production of isoprene, or a related hydrocarbon, from which the rubber molecule must be built by further treatment. The reports do not mention the second, and very difficult problem, that of obtaining a material which will present the essential physical and mechanical qualities of natural rubber.

A Nitrate Amalgamation Proposed

THE directors of the Angela Nitrate and Santa Catalina Nitrate Companies, whose properties are adjacent, have issued circulars to their shareholders proposing an amalgamation.

It is proposed that the capital of the Angela Company be increased from £70,000 to £101,600 by creating £126,400 new shares of 5s. each, the existing £1 shares also to be subdivided into 280,000 shares of 5s. each, and that shareholders of the Santa Catalina Company receive as fully paid up eight 5s. shares of the Angela Company for every five £1 shares of the Santa Catalina Company, which would be voluntarily wound up. The Angela Company reserves of exploitable nitrate are estimated at 3,000,000 metric quintals, and those of the Santa Catalina Co. at 1,447,000 metric quintals, the cost of production of the latter is stated to be considerably the higher. The monthly capacity of the Angela plant is 18,000 metric quintals, and £10,000 is being spent on extensions, while in the event of an amalgamation a further £25,000 is to be spent, increasing its capacity to 30,000 quintals a month. Meetings of the companies have been called for December 21.

High Frequency Induction Furnace Installation at Imperial Steel Works

A METHOD of melting steel by means of high frequency electric current was demonstrated on Tuesday at the Imperial Steel Works of Edgar Allen and Co., Sheffield. The firm has installed an Ajax-Northrop high frequency furnace, which is the first of its kind in the world to be used commercially for the manufacture of high quality tool steel. It marks a striking advance on the old-established crucible process, in which pots containing about 60 lb. of material are heated by coke or gas fires. In the new furnace about 450 lb. of steel are heated in an hour. Heat is not applied externally, but is generated in the furnace by the induction of alternating electric current. The walls of the crucible merely serve the purpose of a container, and the furnace is contained in a square wooden box so cool that the hand can be placed on it.

At a luncheon which followed the visit Professor Desch, of the University of Sheffield, said the process seemed to have every prospect of being very successful. It provided a means of making high-class steel under strictly controlled conditions, without the slightest danger of contamination by foreign gases. The current consumption of the furnace was remarkably low, because the heat was generated exactly where it was wanted, inside the metal and not outside. Mr. C. K. Everitt, a director of Edgar Allen's, said Sheffield stood second to no place in the world for the manufacture of steel, and was always ready to strive its hardest to fulfil all the demands of the engineer.

The "B" Qualification

To the Editor of THE CHEMICAL AGE

SIR,—Since the publication of the Registration Committee's Report the British Association of Chemists has received numerous applications for membership as well as inquiries in regard to the Nominations Committee's requirements in the matter of the "B" qualification.

Having regard to the doubt which appears to exist as to the considerations governing the decision of the Nominations Committee, a fact which seems to have deterred some, probably qualified for full membership, from making application, we would repeat that the most careful consideration is given to every application. If the applicant satisfies the Committee regarding general and scientific education which, though generally, does not necessarily include examination evidence, his case is decided strictly on its merits. Such applicants are asked to co-operate with the Committee by supplying the fullest possible details, including particulars of any research work and processes devised or improved, since in this way the Committee's work is simplified and expedited. In general it may be stated that there is no reason why the application of any candidate of proved competency should be rejected.—I am, etc.,

HENRY T. F. RHODES,
General Secretary.

British Association of Chemists,
"Empire House," 175, Piccadilly, W.1.

Appointments Vacant

A Government Analyst and Bacteriologist for Cyprus.—The Private Secretary (Appointments), Colonial Office, 2, Richmond Terrace, Whitehall, London, S.W.1. December 15.

A Young Graduate, preferably with experience of the technique of colour and colour lake manufacture.—The Director, Research Association of the British Paint, Colour and Varnish Manufacturers, Waldegrave Road, Teddington.

A Mechanical Draughtsman, with experience in the layout and design of chemical plant.—Synthetic Ammonia and Nitrates, Ltd., Billingham, Stockton-on-Tees. Further details are given in our advertisement columns, under "Miscellaneous Announcements," p. xxviii.

A Lecturer in Inorganic and Physical Chemistry at the Sir John Cass Technical Institute, Jewry Street, Aldgate, London, E.C.3.—The Principal. December 31.

A Teacher of Rubber Technology at the Northern Polytechnic, Holloway, London, N.7. Burnham Scale.—The Clerk.

Chemical Matters in Parliament British Work on the Bergius Process

In answer to Mr. Hardie (House of Commons, December 1), Lord E. Percy said that work on the Bergius process had continued steadily at the Fuel Research Station, and the results had indicated that large quantities of liquid fuels could be obtained from coal by this process. A beginning had been made in the investigation of the whole question of the action of hydrogen on coal under different conditions, and interesting results were being gradually accumulated. There could be no doubt of the interest and importance of the process referred to by the hon. member, but it was no part of the duties of the Department to offer opinions on the purely commercial aspects of the inventions which it made or investigated.

Phosphate Rock

Sir Newton Moore (House of Commons, December 5), asked the Prime Minister whether any borings had been made to ascertain the total amount of phosphate rock available for shipment and the phosphate contents in the Nauru and Ocean islands; what was the proportion allotted to Great Britain, Australia, and New Zealand, respectively; and the annual shipment to each of these countries since the mandate was granted?

In a reply circulated in the *Official Report* the Prime Minister stated that he understood that numerous borings had been made to ascertain the amount of phosphate rock available, and that it was estimated that these two islands (together) contain over 100,000,000 tons of phosphate (of a quality containing from 85 per cent. to 88 per cent. tribasic phosphate of lime).

Under the existing arrangements the three Governments were entitled to an allotment of the phosphate produced in each year in the following proportions: United Kingdom, 42 per cent.; Australia, 42 per cent.; New Zealand, 16 per cent. Annual shipments since the Nauru Island Agreement Act was passed had been, to United Kingdom (1920-1922), 32,962 tons; to Australia (1920-1927), approximately 2,035,000 tons; to New Zealand (1922-1927), approximately 496,000 tons.

Dead Sea Salts Concession

Asked by Col. Howard-Bury (House of Commons, December 5), whether the Under-Secretary of the Colonies would undertake not to give away the concession for Dead Sea minerals without first informing the House of the conditions and terms of the concession, Mr. Ormsby-Gore said that there was no question of giving away any concession. Negotiations were proceeding on behalf of the Palestine and Transjordan Governments with a view to safeguarding the interests of these Governments under any concession which might be granted. It would not be either practicable or in accordance with precedent that the terms and conditions should be published before signature.

In answer to further questions Mr. Ormsby-Gore emphasised the fact that negotiations were on behalf of the mandatory Governments of Palestine and Transjordan; the question of possible relations to the existing German monopoly of potash would have to be kept in mind. It was not true that negotiations were going through with Mr. Novomeysky and that Major Tulloch was taking no part whatever. The meetings with the Crown Agents who were acting on behalf of the Palestinian Government had been attended by Major Tulloch and Mr. Novomeysky.

Water Pollution by Beet Sugar Effluents

In a written answer to Mr. Haslam (House of Commons, December 5), Mr. Guinness stated that the Department of Scientific and Industrial Research was carrying out, under the supervision of the Water Pollution Research Board, working scale experiments on the biological treatment of beet sugar factories' waste waters at one of the largest factories in the United Kingdom. The experiments were being conducted for the Department by the staff of the Rothamsted Experimental Station, who also carried out successful preliminary investigation on which the experiments were based. The industry was maintaining close touch with these experiments, and was making a substantial contribution towards their cost. Considerable attention had been and was being devoted to the problem abroad, but it appeared that no complete solution of the problem had yet been found.

From Week to Week

MR. H. MOND, MR. A. W. MOND, and MR. J. G. NICHOLSON have been elected members of the Royal Institution.

SIR ALFRED MOND was entertained by the Foreign Press Association on Thursday at a luncheon at the Café Royal, London.

THE LEIPZIG SPRING EXHIBITION will be held from March 4 to 14, 1928 (general samples fair, March 4-10; large technical and building fair, March 4-14).

THE LIBRARY OF THE CHEMICAL SOCIETY will be closed for the Christmas Holidays at 1 p.m. on Friday, December 23, and will reopen at 10 a.m. on Thursday, December 29.

DR. L. J. SPENCER has been appointed by the Trustees of the British Museum to be Keeper of Mineralogy, in succession to Dr. G. T. Prior, F.R.S., who retires on December 16.

LITHIUM ORE of selected quality will in future be shipped regularly to Bradford by the Silver Leaf Mining Syndicate, of Manitoba, Canada. Small shipments of ore have already been made to England, to Rotterdam, and to New Jersey.

RECENT WILLS INCLUDE:—Mr. William Hackney, Levershulme, Manchester, gum and colour manufacturer, £10,075 (net personality, £8,831).—Mr. Walter Edward Hewes, of Chorlton-cum-Hardy, retired chemical merchant, £29,799 (net personality £18,793).

GERMAN POTASH CONCERNS which oppose the proposal to form a trust, or one-company organisation, out of the German potash industry, as advocated by two German companies, have submitted to the German State authorities recently a brief alleging the futility of such a consolidation.

AN OUTBREAK OF FIRE occurred at the Port Tennant Tar and Chemical Works, near Swansea, last week. Several tar tanks were alight, and two members of the fire brigade fell into one, fortunately without injury, while training a hose on the fire. The extent of the damage is not known yet.

L. R. B. PEARCE, LTD., of 275 1/6, High Holborn, London, chemical merchants, are moving on January 1 to more commodious premises at 50, Mark Lane, London, E.C.3. Their new telephone numbers will be Royal 8742 and 8743, and their telegraphic address "Ellarbepea, Fen, London."

BET SUGAR NEWS.—The result of an inquiry made in November by the German Sugar Industry Association has just been published, and shows the area for cultivation in 1927-28 will comprise 406,233 hectares compared with 369,160 the previous year.—The Shropshire beet sugar factory is now stated to be working at full capacity.

ACCORDING TO THE ARTIFICIAL SILK SECTION of *The World's Economic Forces*, a work being prepared by the Dresdner bank, the provisional estimate of production of artificial silk this year is 240,000,000 lb. America leads production, and Italy is stated now to have outstripped Germany and England and has attained second place as producer.

NEGOTIATIONS ARE SAID TO HAVE BEEN COMPLETED between Professor Gottsberger, president of the Centrifugal Cast Iron Pipe Co., and large French cast iron pipe interests, which arrangement is said to complete the chain of manufacturers using the centrifugal process throughout the world, and is regarded as an important step in the regularisation of cast iron pipe prices.

TENDERS ARE INVITED for the supply of 400 tons of aluminium sulphate (to contain the equivalent of 14 to 15 per cent. of aluminium oxide), or other precipitant, for sewage purification purposes, delivered at the rate of about 30 tons per week, at the Salford Sewage Works, Weaste (Corporation sidings), for the Corporation. Samples to be submitted for analysis. Tenders, addressed Chairman, River Committee, Town Hall, Salford, by 12 noon on December 14.

E. I. DU PONT DE NEMOURS AND Co., and the National Distillers Products Corporation of America have made an official announcement of the commercial operation of a process for the extraction of glycerine from molasses mash at the plant of the Eastern Alcohol Corp., Deepwater, N.J., jointly owned by du Pont and National Distillers. Experiments have been under way for several years, and the perfection of the process is said to make possible the production of glycerine at an estimated figure of about 5 per cent. of present costs.

THE SIXTH RAMSAY CHEMICAL DINNER will be held in the Trades House, Glassford Street, Glasgow, on Wednesday, December 21, at 6.30 p.m. This year the dinner has been subtitled "The Institute of Chemistry" Jubilee, to enable the profession in the West of Scotland to commemorate locally that event; and the committee appointed to carry through the arrangements have secured as chairman Professor Arthur Smithells, F.R.S., President of the Institute of Chemistry of Great Britain and Ireland. The dinner is held under the joint auspices of the Society of Chemical Industry, the Institute of Chemistry, the Society of Dyers and Colourists, the Glasgow University Alchemists' Club, the Andersonian Chemical Society, the Ardeer Chemical Club, and the Royal Philosophical Society of Glasgow. The price of the tickets is 12s. 6d. (students 10s.). Applications should be addressed to Dr. E. Dow, at 9, Park Crescent, Glasgow, C.1.

THE ACONCAGUA OFICINA of the Lautaro Nitrate Co. will be reopened at the end of December.

A ONE-STORY BUILDING at the Lion Works of Kynoch, Ltd., Witton, was badly damaged by fire on Friday, December 2.

THE ASSOCIATION OF GERMAN STEEL AND IRON MANUFACTURERS have informed the German Government of their intention to close down their workshops in Western Germany on January 1.

THE ORDINARY SCIENTIFIC MEETING of the Chemical Society arranged for December 15 has been abandoned in view of the Jubilee dinner of the Institute of Chemistry being held that evening.

"ARTIFICIAL SILK AND ITS USES" was the subject of a luncheon address given at Bradford on Thursday, December 1, to members of the West Riding Section of the Society of Dyers and Colourists, by Mr. T. Brough, chief designer of Courtaulds, Ltd.

ACCEPTANCE OF THE TENDER of International Combustion, Ltd., to provide equipment for the first instalment of the boiler house at the Kirkstall Generating Station for the sum of £202,114, has been recommended by the Leeds Corporation Electricity Committee.

THE STAR PATENT FUEL WORKS, Blackweir, near Cardiff, is to be permanently closed down, states a South Wales correspondent. About 150 men are affected, but it is hoped that most of them will be absorbed in the new works the company is erecting near the Roath Basin, Cardiff Docks.

PROFESSOR E. C. C. BALY, of the University of Liverpool, has been appointed president of section B (chemistry), and Professor A. Smithells president of section L (education), for the meeting of the British Association for the Advancement of Science to be held next year in Glasgow from September 5 to 12.

SHEET LEAD AND LEAD PIPES are among the latest articles to be referred to the standing committee appointed under the Merchandise Marks Act, 1926. Interested parties are requested to communicate with the secretary, Mr. E. W. Reardon, New Public Offices, Great George Street, London, S.W.1, not later than December 31.

THE NEW RHODIASETA ACETATE ARTSILK FACTORY is to be erected at Freiburg, as this town has granted more favourable conditions regarding taxes and electric power supplies than Carlsruhe. The building, which will cost £300,000, will commence in February, and it is hoped that production can be begun in the autumn with 1,000 workers.

THE FORMATION OF A ZINC CARTEL is once more being mooted. The prime movers in the matter are certain Belgian companies, and a number of important American firms have offered to agree to a 5 per cent. restriction, if European firms will do likewise. It is, however, too early to advance an opinion as to the success or otherwise of the proposals.

SIR ALFRED MOND, on behalf of Imperial Chemical Industries, Ltd., has offered to the Royal Society a subscription of £1,000 a year until further notice to meet the deficit on publications, in substitution of that of £500 a year for three years made by Brunner, Mond and Co., in 1925, and the offer has been gratefully accepted by the Council of the Society.

AT THE STATUTORY MEETING of the Rayon Manufacturing Co. (1927), Ltd., on Tuesday, Sir Sydney M. Skinner stated that a portion of the plant at the Ashted factory was now running again. With one or two unimportant exceptions the debts of the old company had been amicably settled on satisfactory terms and in a manner distinctly helpful to the prospects of the company.

THE ANNUAL DINNER of the Institution of Petroleum Technologists was held at the Connaught Rooms on Tuesday, Mr. Alfred C. Adams, president, in the chair. Amongst those present were Sir Charles Bedford, Commander R. E. Stokes-Rees, Major H. T. Crozier (Inspector of Explosives, Board of Trade), Professor J. S. S. Brame, Dr. A. E. Dunstan, Dr. Frank B. Dehn, Dr. F. H. Garner, Professor J. W. Hinchley, Dr. Rudolf Lessing, Dr. W. R. Ormandy, and Professor A. W. Nash.

DETAILS ARE NOW TO HAND of the factory at Lancaster which the Non-Inflammable Film Co. has purchased from the War Office. There is, it is stated, an unlimited supply of water available, of a quality suitable for the company's processes, and railway sidings run into the factory. Part of the main building which is not suitable is being dismantled and has already been sold. Plans for development on a considerable scale have been completed, and the equipment of the works is being undertaken with all possible speed. The site covers about 34 acres on the banks of the River Lune.

THE NORWEGIAN HYDRO-ELECTRIC CORPORATION has announced a new issue of \$20,000,000 gold bonds, dated November 1, 1927, and maturing November 1, 1957, with interest at 5 1/2 per cent. The issue is being offered in the United States by the National City Bank. A substantial portion of the total, however, has been reserved for sale in various European markets, including \$2,500,000 to be publicly offered in Sweden, by the Stockholms Enskilda Bank. The purpose of the issue is to provide funds for additional facilities in connection with a change in processes of manufacture. It seems likely that this issue is connected with the recent arrangement made by the company with the I.G.

References to Current Literature

British

- APPARATUS.—A simple form of automatic syphon. D. C. Harrison. *J. Chem. Soc.*, November, pp. 2895-2897.
- CATALYSIS.—A study of the catalysis by nickel of the union of oxygen and hydrogen by a new method. D. R. Hughes and R. C. Bevan. *Proc. Roy. Soc. A.*, December 1, pp. 101-108.
- GENERAL.—The relative stability of nitrous oxide and ammonia in the electric discharge. W. K. Hutchinson and C. N. Hinshelwood. *Proc. Roy. Soc. A.*, December 1, pp. 131-136.
- Studies of gas-solid equilibria. I.—Pressure-temperature equilibria between benzene and (a) ferric oxide gel; (b) silica gel in sealed systems of known and unalterable total composition. B. Lambert and A. M. Clark. *Proc. Roy. Soc. A.*, December 1, pp. 183-201.
- The composition of bleaching powder. I.—E. A. O'Connor. *J. Chem. Soc.*, November, pp. 2700-2710. A method has been developed for the isolation of relatively pure calcium hypochlorite. Various basic salts have been isolated. The probable constitution of bleaching powder is discussed in the light of these results.
- The action of alkalis on clay. H. B. Oakley. *J. Chem. Soc.*, November, pp. 2819-2831.
- On active nitrogen. IV.—The independence of the afterglow of the chemical properties of active nitrogen. E. J. B. Willey. *J. Chem. Soc.*, November, pp. 2831-2842.
- HYDROGENATION OF OILS.—Recent advances in the hydrogenation of oils. E. R. Bolton. *J.S.C.I.*, December 2, pp. 444-446T.
- Selective hydrogenation. K. A. Williams. *J.S.C.I.*, December 2, pp. 446-448T.
- The melting point of hydrogenated cottonseed oil. K. A. Williams. *J.S.C.I.*, December 2, pp. 448-449T.
- Notes on the hydrogenation of fatty acid and of mixtures of fatty acids with neutral oils. R. G. Pelley. *J.S.C.I.*, December 2, pp. 449-451T.
- PHOTOGRAPHY.—The preparation and properties of some synthetic photohalide emulsions. E. P. Wightman, A. P. H. Trivelli, and S. E. Sheppard. *Photographic Journal*, December, pp. 500-504.
- PLANT.—Rubber in relation to engineering. T. R. Dawson. *Rubber Age*, December, pp. 404-407.

United States

- ANALYSIS.—The potentiometric determination of indium. U. B. Bray and H. D. Kirschman. *J. Amer. Chem. Soc.*, November, pp. 2739-2744.
- GENERAL.—Determining heat consumption for caustic dehydration. G. Angel. *Chem. Met. Eng.*, November, pp. 683-685.
- OILS.—Modern deodorising methods. J. P. Harris and A. B. McKechnie. *Oil and Fat Industries*, November, pp. 371-377.
- Meal settlings damage crude oil. E. R. Barrow. *Oil and Fat Ind.*, November, pp. 383-385.
- The standardisation of oil for mayonnaise. R. U. Norris. *Oil and Fat Ind.*, November, pp. 397-399.
- ORGANIC.—Para-cymene studies. VIII.—A. Para-cymene-2:5-diamine. B. New dyes derived from 2-amino- and 2-amino-5-bromo-*p*-cymene. A. S. Wheeler and L. F. P. Cutlar. *J. Amer. Chem. Soc.*, November, pp. 2819-2822.
- Para-cymene studies. IX.—The nitration of 2-amino-*p*-cymene. A. S. Wheeler and F. P. Brooks. *J. Amer. Chem. Soc.*, November, pp. 2832-2834.
- The formation of triphenylmethyl peroxide from carbon dioxide and phenylmagnesium bromide. F. F. Blicke. *J. Amer. Chem. Soc.*, November, pp. 2843-2849.
- PHYSICAL.—The surface tension of liquid carbon dioxide. E. L. Quinn. *J. Amer. Chem. Soc.*, November, pp. 2704-2711.
- The densities of co-existing liquid and gaseous carbon dioxide and the solubility of water in liquid carbon dioxide. H. H. Lowry and W. R. Erickson. *J. Amer. Chem. Soc.*, November, pp. 2729-2734.

German

- ANALYSIS.—The volumetric determination of sulphates in water according to Bahrdr. I.—M. Kehren and H. Stommel. *Chemiker-Zeitung*, November 26, pp. 913-915.
- A shortened determination of iron in brass. A. Zimmermann. *Chemiker-Zeitung*, November 26, p. 915.
- New methods for the determination and separation of metals by means of *o*-hydroxyquinoline. A new rapid method for the determination of bismuth. R. Berg. *Z. analytische Chem.*, Vol. 50 (5), pp. 177-179.
- New methods for the systematic qualitative detection of cations without the application of hydrogen sulphide, thioacetic acid, sulphides, etc. O. Macchia. *Z. analytische Chem.*, Vol. 50 (5), pp. 180-185.
- The gravimetric determination of bismuth. H. Kubina and J. Plichta. *Z. analytische Chem.*, Vol. 50 (5), pp. 201-207.
- ELECTROCHEMISTRY.—Electrochemical preparation of Scheele's green and Schweinfurth green. *Die Metallbörse*, November 30, p. 2668.
- FATS, ETC.—Advances in the investigation of olein. J. Davidsohn. *Chemiker-Zeitung*, November 30, pp. 921-923.
- GENERAL.—The iron cyano-colours, especially Milori blue. A. Müller-Magdeburg. *Chemiker-Zeitung*, November 30, pp. 923-924.
- ORGANIC.—The preparation of acetone. E. Donath. *Chemiker-Zeitung*, November 30, p. 924.
- Investigations in the mono- and sesqui-terpene series. E. Deussen. *J. praktische Chem.*, Vol. 117 (8/9), November, pp. 273-304.

Miscellaneous

- ANALYSIS.—The determination of lactic acid in milk. J. Straub. *Rec. Travaux Chimiques Pays-Bas*, November 15, 866-884 (in German).
- COLLOIDS.—The number of phases in colloidal systems. P. Bary. *Revue des Colloïdes*, July, pp. 617-623 (in French).
- The coagulation of colloidal solutions of sulphur. G. Rossi. *Revue des Colloïdes*, June, pp. 581-584; July, pp. 624-629 (in French).
- GENERAL.—Comparison of the products formed by the decomposition of paraffin at 450° C. ("cracking") and of those obtained on decomposing paraffin in the presence of hydrogen and high pressure ("berginisation"). Contribution to the study of berginisation. H. I. Waterman and J. N. J. Perquin. *Rec. Travaux Chimiques Pays-Bas*, November 15, pp. 813-836 (in French).
- Catalytic hydrogenations in liquid media by means of platinum and palladium. G. Vavon. *Bull. Société Chimique*, October, pp. 1253-1290 (in French).
- Researches on some rare earths. P. B. Sarkar. *Annales de Chim.*, September-October, pp. 207-262 (in French).
- The dissociation of α -ketonic acids. R. Barré and A. Cornillot. *Annales de Chim.*, September-October, pp. 329-339.
- OILS.—On the vulcanisation of oils. I.—P. Stamberger. *Rec. Travaux Chimiques Pays-Bas*, November 15, pp. 837-840 (in German).
- ORGANIC.—The migration of the diphenylmethyl and benzyl groups in phenol. J. van Alphen. *Rec. Travaux Chimiques Pays-Bas*, November 15, pp. 799-812 (in English).
- A method of preparing α -diketones from $\alpha\beta$ -unsaturated ketones. C. Dufraisse and H. Moureu. *Bull. Société Chimique*, October, pp. 1370-1378 (in French).
- Phenylbarium iodide. H. Gilman and F. Schulze. *Bull. Société Chimique*, October, pp. 1333-1336 (in French).
- Chlorination and bromination of hydroxybenzoic acids by means of a mixture of the hydracid and hydrogen peroxide. A. Leulier and L. Pinet. *Bull. Société Chimique*, October, pp. 1362-1370 (in French).
- On some molecular transpositions. P. Ramart and P. Amagat. *Annales de Chim.*, September-October, pp. 263-328 (in French).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

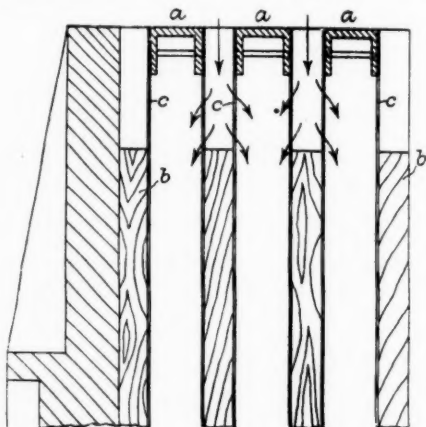
Abstracts of Complete Specifications

279,916. ALIPHATIC ACID ANHYDRIDES, MANUFACTURE OF. H. Dreyfus, 8, Waterloo Place, London, S.W.1. Application date, June 1, 1926.

This process is for the manufacture of aliphatic anhydrides from aliphatic acids, particularly acetic anhydride from glacial acetic acid, and from dilute acetic acid. It has been found that acetic anhydride vapour will not combine with dry steam if no condensation of the steam takes place, and that the anhydride may be condensed and separated under these conditions. Acetic anhydride may be obtained from acetic acid at high temperatures in nearly quantitative yield, and the acetic anhydride does not tend to form acetic acid and may be condensed and separated without hydrolysis if the water present is maintained in gaseous form. The condensation may be such that all the acetic anhydride is condensed, or the remaining water vapour may be treated for the recovery of acetic acid by condensation and fractional distillation. The condensation may be effected by passing the hot gases upwards through fractionating columns, or in presence of solvents for the anhydride which have boiling points higher than that of water and preferably much higher than that of the anhydride (200°–300° C.). The solvents are preferably insoluble in water and non-volatile in steam, *e.g.*, chlorobenzene, *p*-dichlorobenzene, benzylether, tetrachlorethane, paraffin oil, acetyl glycerins, *e.g.*, triacetin, phenetol, anisol, cresols, and *p*-cresol acetate. The solvents may be heated to drive off the acetic anhydride or fractionally distilled, or the solvents may be circulated from the absorption zone through a higher temperature zone to separate the acetic anhydride, the solvent then being returned to the absorption zone. The temperature of decomposition of the acetic acid is preferably 700°–1,000 C., the speed of the gas being increased at the higher temperatures. The process is also applicable for obtaining propionic anhydride or other homologous anhydrides from the vapours of the corresponding aliphatic acids. Reference is directed in pursuance of Section 8, Sub-section 2 of the Patents and Designs Acts of 1907 and 1919, to Specifications Nos. 257,968, 256,664, and 256,663.

279,941. EXTRACTING AND DRYING INORGANIC JELLIES, PROCESS FOR. W. Carpmal, London. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, August 4, 1926.

In the extraction and drying of silicic acid gel considerable loss may be experienced in the handling of the material by its reduction to too small a size. In this process, a granular



279,941

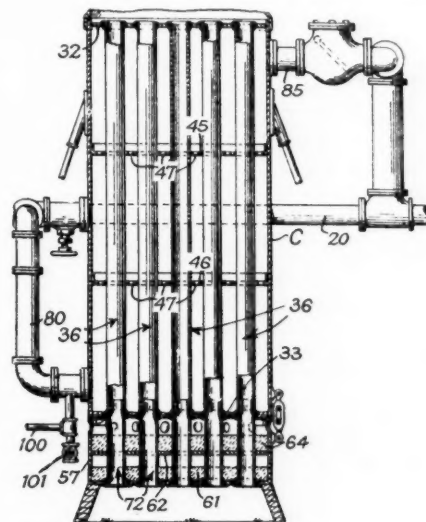
material is obtained in any desired size. The apparatus comprises wooden plates *b* and iron frames *a* over which is stretched wire network *C* of about 2 centimetres mesh. The wooden

plates are shorter than the frames, and the sol is poured in to fill the apparatus as shown by the arrows. After the sol has set to a gel, the apparatus is unclamped and the iron frames taken out, and the gel slabs subjected to washing with water until the desired purity is obtained. The slabs are then dried, and the gel divides into small pieces corresponding to the mesh of the network.

280,034 and 280,039. REFINING OR CRACKING OF HYDROCARBONS, PROCESS FOR. R. K. Collins, 1100, Mistletoe Drive, Fort Worth, Tex., U.S.A. Application dates, November 12 and 16, 1926.

280,034. The hydrocarbon vapour is treated in an expansion chamber which is heated by vertical tubes. Perforated horizontal baffles are provided across the expansion chamber, and the tubes are so arranged that the intersection of the heating zones surrounding them leaves a cooler zone between the hotter zones where the vapour is subjected to less heating.

280,039. The expansion vessel *C* for the above process is provided with a number of heating tubes *36* supported in



280,039 Fig. 2.

tube plates 32, 33 (or alternatively electric resistances may be used). The vessel *C* is divided into three parts by baffle plates 45, 46, having openings 47 for the vapour. The vessel *C* is mounted above a furnace and is separated from it by a structure comprising a cylindrical chamber 57, having central horizontal partitions 62 supporting insulating material 64, while another plate of insulating material 61 rests on the bottom plate of the cylindrical chamber. The hot gases from the furnace are conducted to the heating tubes 36 by flues 72. The vapour from the still passes through the pipes 20, 80, to the lower part of the expansion chamber *C*, and steam may also be supplied through the pipe 100, and permanent gases through the pipe 101. Vapours pass upward through the vessel *C*, and products pass through pipe 85 to the dephlegmator.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: —256,610 (A. C. Jessup), relating to electrolytic production of metals, see Vol. XV, p. 377; 260,001 (Soc. Italiana Pirelli), relating to protection of rubber articles against ageing, see Vol. XV, p. 621; 263,830 (Ammonia), relating to purification of gas from the distillation of coal or coke, see Vol. XVI, p. 263; 265,169 (Roessler and Hasslacher Chemical Co.), relating to vulcanisation of rubber, see Vol. XVI, p. 361;

271,852 (I.G. Farbenindustrie Akt.-Ges.), relating to extraction of carbon dioxide from gaseous mixtures, see Vol. XVII, p. 134; 272,246 (Aluminium Industrie Akt.-Ges.), relating to electrolytic extraction of pure aluminium from crude aluminium alloys and the like, see Vol. XVII, p. 23 (Metallurgical Section).

International Specifications not yet Accepted

278,651. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, October 8, 1926.

A nitrobenzanthrone is reduced to the aminobenzanthrone, which is diazotised with nitrosyl-sulphuric acid, and the solution diluted and boiled. The oxy compound is purified by solution in alkali, and methylated by means of toluene-sulphonic methyl ester in trichlorobenzene. The methoxybenzanthrone is fused with alcoholic potash to obtain the green vat dyestuff described in Specification 181,304.

278,672. SYNTHETIC DRUGS. F. Hoffmann-La Roche and Co. Akt.-Ges., 184, Grenzacherstrasse, Basle, Switzerland. International Convention date, October 9, 1926.

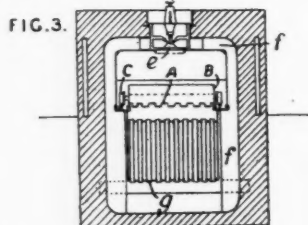
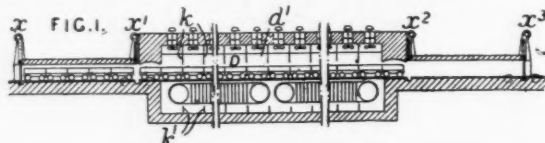
The di-phenolisatins are treated with alkylating or aralkylating agents to obtain O:O-di-derivatives, from which O:O:N-tri-derivatives may be produced. The O:O-di-derivatives may be converted into N-acetyl compounds by acetylation. Thus di-phenolisatin may be treated with dimethyl sulphate to obtain di-anisolisatin or N-methyldianisolisatin. An N-acetyl derivative may be obtained.

278,689. VULCANISING INDIARUBBER. Goodyear Tire and Rubber Co., 1144, East Market Street, Akron, Ohio, U.S.A. (Assignees of L. B. Sebrell, R.D.1, Cuyahoga Falls, Ohio, U.S.A.) International Convention date, October 8, 1926.

Vulcanisation is accelerated by the use of the reaction products of mercaptans or their derivatives and basic nitrogen compounds such as ammonia, diethyl, propyl, and butyl amines. Suitable mercaptans include mercapto-benzothiazole and thiophenol. Examples are given.

278,694. DISTILLING OIL SHALE. Patent-Aktiebolaget Grondal-Ramen, 3, Norrmalmstorg, Stockholm. International Convention date, October 7, 1926.

Shale, brown coal, etc., are passed through a tunnel oven D on grates having perforated plates A and an upstanding



278,694

flange B, and supported by wheels C. The combustion gases pass over tubes g through which the evolved steam and gases pass, to passages f and a fan e. The space d' is divided by partitions k into chambers which communicate around the partitions. Dampers x, x', x'', x''' are provided to regulate the heating as the material passes through the oven.

278,698. UREA-FORMALDEHYDE CONDENSATION PRODUCTS. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, October 8, 1926. Addition to 258,289.

The condensation products are mixed prior to the hardening stage with materials capable of furnishing acids during the heat treatment. Suitable materials include magnesium chloride, formic esters, and formamide. Some examples are given.

278,700. PURIFYING GAS. Soc. du Gaz de Paris, 6, Rue Condorcet, Paris. International Convention date, October 11, 1926.

Coal gas is treated in two stages for the removal of hydrocyanic acid and sulphuretted hydrogen by means of a mixture of a solution of a ferrous salt and milk of lime. After the first treatment, the purifier is filtered and the solid residue exposed to air, powdered, and suspended in water for the second stage. Iron sulphide is formed, and oxidised to ferric oxide and sulphur, which is extracted at each regeneration.

278,728. DYES. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, October 6, 1926.

Anthraquinone vat dyestuffs containing cyanuric rings are described in specifications 205,523, 231,688, 234,086, and 237,872 (see THE CHEMICAL AGE, Vol. IX, p. 580; Vol. XII, p. 483; Vol. XIII, pp. 108 and 359), and these are purified by treating with aqueous hypochlorites, and much brighter colours are thus obtained. Examples are given of the treatment of dyestuffs from 2 mols. 1-aminoanthraquinone, a mixture of 1 mol. 1-amino-4-methoxy and 1 mol. 1-aminoanthraquinone, and also from a mixture of 1 mol. 1:8-diaminoanthraquinone, 3 mols. 1-aminoanthraquinone, and 1 mol. of ammonia by condensation with cyanuric chloride. These are treated in aqueous suspension with sodium hypochlorite, or an organic liquid such as nitrobenzene may be used.

278,729. CHLORINATED AMINES. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, October 6, 1926.

A solution of 1-amino-2:4-dimethylbenzene in concentrated sulphuric acid is treated with chlorine to obtain 3-chloro- and 5-chloro- or 3:5-dichloro-1-amino-2:4-dimethylbenzene. The 3:5-dichloro compound forms a sulphate sparingly soluble in concentrated sulphuric acid. Examples are given of the formation and separation of these compounds.

278,745. HYDROCARBONS. General Carbonalpha Co., Equitable House, Wilmington, Del., U.S.A. (Assignees of H. C. J. Aarts, Huize Lagendonck, Dongen, Holland.) International Convention date, October 7, 1926.

Active carbon is heated with hydrogen to 150°-600° C. to obtain methane and other hydrocarbons, which are absorbed in the carbon to form a solid fuel. Active charcoals may be used, or the carbon may be obtained by carbon monoxide to 230°-600° C. with or without a catalyst. A nickel catalyst may be used in the reaction with hydrogen. Saturated hydrocarbons are mainly produced at 150°-400° C., and unsaturated hydrocarbons at 400°-600° C. Coal, peat, wood, brown coal, etc., may be gasified to obtain carbon monoxide, which is then converted into carbon at 300°-500° C., and hydrogen is then passed over it. The carbon may be wholly gasified, or the residue may absorb the hydrocarbons. The product may be used as a fuel in internal combustion engines.

278,747. ZINC AND SODIUM SULPHATES. Metallbank und Metallurgische Ges. Akt.-Ges., 45, Bockenheimer Anlage, Frankfurt-on-Main, Germany. International Convention date, October 7, 1926.

A solution of zinc and sodium sulphates is concentrated till there is not more than half a gram molecule of sodium sulphate per kilo. of solution. If the solution is cooled to 10°-26° C., zinc sulphate is crystallised free from sodium. The sodium is previously removed by cooling to 40°-60° C. as sodium-zinc sulphate. In the application to burnt sulphide ores, the ore is subjected to chloridising-roasting, and copper is removed as cuprous chloride by digesting with copper. Iron and cobalt are removed by lime and zinc dust. The ore is lixiviated, and most of the sodium sulphate removed by cooling to 5° C. The liquor is used for lixiviating fresh burnt ore till nearly saturated with zinc sulphate, and then treated as above.

LATEST NOTIFICATIONS.

281,218. Manufacture of improved catalysts. I.G. Farbenindustrie Akt.-Ges. November 27, 1926.

281,227. Process of preparing para-hydroxy-ortho-benzoyl-benzoic acid. Newport Co. November 29, 1926.

281,232. Process for the treatment of fats and oils. Böhme Akt.-Ges., H. T. November 25, 1926.

281,240. Hydrogenation of coal. Bates, L. T. November 23, 1926.

281,247. Process for the manufacture and production of motor fuels. I.G. Farbenindustrie Akt.-Ges. November 26, 1926.

- 281,257. Manufacture of hydrogenated naphthostyrls. I.G. Farbenindustrie Akt.-Ges. November 25, 1926.
- 281,281. Process for manufacturing chloroperylene quinones. Bensa, F. November 26, 1926.
- 281,290. Manufacture of phenylthioglycolic acids containing halogen and alkyl groups in the molecule. I.G. Farbenindustrie Akt.-Ges. November 24, 1926.
- 281,298. Manufacture and production of aromatic hydrocarbons. I.G. Farbenindustrie Akt.-Ges. November 24, 1926.
- 281,307. Catalytic oxidation of organic compounds. Selden Co. November 24, 1926.
- 281,310. Process for preparing surfaces for the reception of cellulose lacquers. I.G. Farbenindustrie Akt.-Ges. November 24, 1926.
- 281,336. Process of producing dyeings and printings by means of vat-dyestuffs. Durand et Huguenin Soc. Anon. November 29, 1926.
- 281,337. Treatment of hydrocarbons with liquid sulphur dioxide. Allgemeine Ges. für Chemische Industrie. November 26, 1926.

Specifications Accepted, with Date of Application

- 257,262. Applying zinc coatings to iron articles, Method of. T. Liban. August 18, 1925.
- 257,618. Vat dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. August 26, 1925.
- 257,912. Liquid or other hydrocarbons or derivatives from carbonaceous materials, Manufacture of. I.G. Farbenindustrie Akt.-Ges., September 2, 1925.
- 260,605. Alkamine esters of N-substituted ortho-amino-benzoic acid, Manufacture of. I.G. Farbenindustrie Akt.-Ges. October 28, 1925. Addition to 241,767.
- 263,779. Hydrofluosilicic acid, Preparation of solutions of. W. Moller and W. Kreth. December 23, 1925.
- 266,674. Highly active carbon blocks or granules, Process for the manufacture of. Chemische Werke Carbon Ges. February 24, 1926.
- 267,491. Metal hydroxides free from iron, Process for obtaining by means of basic substances from metal salt solutions containing iron. O. Lederer, W. Stanczak, and H. Kassler. March 9, 1926.
- 269,546. Recovery of sulphur from solutions of ammonium polysulphides. I.G. Farbenindustrie Akt.-Ges. April 16, 1926.
- 269,556. Acetaldehyde and acetaldehyde-amine condensation products. Rubber Service Laboratories Co. April 12, 1926.
- 274,108. Aluminium, Process for producing in electric furnaces. Soc. Italiana di Elettrochimica. July 8, 1926.
- 274,481. Chemical process for the welding of metals and its application. B. Racheeff and M. Gofmann. July 15, 1926.
- 275,579. Titaniferous materials, Process in the treatment of. Titan Co. Aktieselskabet, August 3, 1926.
- 276,313. Alkali hydride, Process for the production of. Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler. August 23, 1926.
- 280,613. Organic compounds of arsenic, Manufacture of. G. Newbery and May and Baker, Ltd. July 8, 1926.
- 280,637. New Dyestuffs of the anthracene series, Manufacture of. K. Carpmal and K. S. Carpmal. (I.G. Farbenindustrie Akt.-Ges.) August 17, 1926.
- 280,639. Coagulation of rubber latex. H. E. Potts. (R. Koepf and Co.) August 18, 1926.
- 280,652. Black and grey vat dyes. British Dyestuffs Corporation, Ltd., A. Shepherdson and S. Thornley. August 24, 1926.
- 280,661. Vulcanised rubber and materials for use therein, Manufacture of. British Dyestuffs Corporation, Ltd., C. J. T. Cronshaw, and W. J. S. Naunton. September 3, 1926.
- 280,712. Catalysts, Regeneration of. H. G. C. Fairweather. (Selden Co.) November 26, 1926.
- 280,734. Hydrogenation and cracking of hydrocarbon compounds, Method and apparatus for. Internationale Bergen-Cie Voor Olie-en Kolenchemie, and A. Debo. January 10, 1927.
- 280,763. Water gas, phosphoric acid, and an aluminium silicate slag, Process for producing. E. Urbain. January 20, 1927.

Applications for Patents

- Allgemeine Ges. für Chemische Industrie and Durand et Huguenin Soc. Anon. Treatment of hydrocarbons. 32,010. November 28. (Germany, November 26, 1926.)
- Barrett Co. Distillation of tar, etc. 31,951. November 28. (U.S., December 14, 1926.)
- Bloxam, A. G., and Geigy Akt.-Ges. Manufacture of emulsifying agents. 32,427. December 1.
- British Celanese, Ltd., and Ellis, G. H. Treatment of materials containing cellulose derivatives. 31,935. November 28.
- British Celanese, Ltd., Ellis, G. H., and Olpin, H. C. Treatment of cellulose derivatives. 31,936. November 28.
- British Glues and Chemicals, Ltd., and Drew, R. B. Manufacture of glue. 32,412. December 1.

- Carpmal, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of metallic nitrates. 32,415. December 1.
- Carpmal, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of azo dyestuffs. 32,563. December 2.
- Coles, S. O. Cowper-. Process of rendering iron, etc., rustless. 32,048. November 29.
- Coles, S. O. Cowper-. Sherardising. 32,620. December 2.
- Deutsche Gold- und Silber Scheideanstalt vorm. Roessler and Schoenbeck, F. Process for preparing 2-chloropyridine. 31,958. November 28. (Germany, December 3, 1926.)
- Deutsche Gold- und Silber Scheideanstalt vorm. Roessler. Manufacture of amalgams. 32,167. November 29.
- Dreyfus, H. Treatment of cellulose derivatives. 32,249, 32,250. November 30.
- Frischer, H. Concentration of nitric acid. 32,430. December 1. (Germany, December 6, 1926.)
- Frischer, H. Apparatus for treating solutions. 32,440. December 1. (Germany, December 6, 1926.)
- Goldschmidt, S. Process for oxidation of alcohol. 32,264. November 30.
- Gordon, K. Hydrogenation of carbonaceous materials. 32,543. December 2.
- Grindley and Co., Ltd., and Yeates, R. L. Synthetic resins. 32,301. November 30.
- Humphrey, H. A. Hydrogenation of carbonaceous materials. 32,237. November 30.
- Humphrey, H. A. Recovery of oils from carbonaceous material. 32,238. November 30.
- Humphrey, H. A. Low-temperature distillation of carbonaceous materials. 32,239. November 30.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of derivatives of phthalic acid. 31,966. November 28.
- I.G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Process of dyeing felts, etc. 32,265, 32,266. November 30.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of metallic nitrates. 32,415. December 1.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of hydrogen, etc. 32,548. December 2.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Process for liquefying oxides of nitrogen. 32,549. December 2.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of alcohols. 32,550. December 2.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Carrying out high-pressure, etc., reactions. 32,551. December 2.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of iron powder. 32,552. December 2.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of solid formaldehyde. 32,553. December 2.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of products analogous to montan wax. 32,685. December 3.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of products from montan wax. 32,686. December 3.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of potassium compounds. 32,687. December 3.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Process for eliminating oxygen from gases. 32,688. December 3.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of cobalt carbonyl. 32,689. December 3.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of cementing-compositions. 32,428. December 1. (Germany, December 1, 1926.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of arsenobenzimidazolones. 32,429. December 1. (Germany, December 2, 1926.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of benzimidazolone-arsinic acids. 32,567. December 2. (Germany, December 2, 1926.)
- I.G. Farbenindustrie Akt.-Ges. Production of alkylpyrazolanthrones. 32,684. December 3. (Germany, December 14, 1926.)
- I.G. Farbenindustrie Akt.-Ges. Production of carbon disulphide. 32,705. December 3. (Germany, December 13, 1926.)
- Imperial Chemical Industries, Ltd. Hydrogenation of carbonaceous materials. 32,337. November 30.
- Imperial Chemical Industries, Ltd. Recovery of oils from carbonaceous material. 32,338. November 30.
- Imperial Chemical Industries, Ltd. Low-temperature distillation of carbonaceous materials. 32,339. November 30.
- Imperial Chemical Industries, Ltd. Hydrogenation of carbonaceous materials. 32,543. December 2.
- Neuscheller, J. Othmar-, and Ohle, H. Manufacture of ethylalcohol-gels. 32,142. November 29. (Germany, November 30, 1926.)
- Pickard, J. A. Filters. 32,539. December 2.
- Sykes and Sons, Ltd., J., and Sykes, E. P. Dyeing-machines. 32,340. December 1.
- Talbot, B. Metallurgical furnaces. 32,564. December 2. (Belgium, June 30.)
- Wheeler, R. V. Carbonisation of coal. 32,599. December 2.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
 ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.
 ACID HYDROCHLORIC.—35. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.
 ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
 ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
 AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
 BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages extra.
 BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.
 BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
 CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.
 COPPER SULPHATE.—£25 to £25 10s. per ton.
 METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 5d. to 2s. 10d. per gall.; pyridinised industrial, 2s. 7d. to 3s. per gall.; mineralised, 3s. 6d. to 3s. 10d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.
 NICKEL SULPHATE.—£38 per ton d/d.
 NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
 POTASH CAUSTIC.—£30 to £33 per ton.
 POTASSIUM BICHROMATE.—4½d. per lb.
 POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs.
 SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia £37 to £45 per ton, carr. paid.
 SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
 SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
 SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.
 SODIUM ACETATE 97/98%.—£21 per ton.
 SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.
 SODIUM BICHROMATE.—3½d. per lb.
 SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.
 SODIUM CHLORATE.—2½d. per lb.
 SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
 SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.
 SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
 SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.
 SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.
 SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7½d. to 8d. per lb. Crude 60's, 2s. 4d. to 2s. 5d. per gall.
 ACID CRESYLIC 99/100.—2s. 11d. to 3s. per gall. 97/99.—2s. 4d. to 2s. 8½d. per gall. Pale, 95%, 2s. 3d. to 2s. 6d. per gall. Dark, 95%, 2s. 1d. to 2s. 3d.
 ANTHRACENE.—A quality, 2½d. per unit. 40%, £5 per ton.
 ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.
 BENZOLE.—Crude 65's, 9½d. to 9½d. per gall., ex works in tank wagons. Standard Motor, 1s. 1½d. to 1s. 2½d. per gall., ex works in tank wagons. Pure, 1s. 5d. to 1s. 6d. per gall., ex works in tank wagons.
 TOLUOLE.—90%, 1s. 4d. to 1s. 8d. per gall. Firm. Pure, 1s. 6d. to 2s. per gall.
 XYLOL.—1s. 3d. to 1s. 10d. per gall. Pure, 1s. 9d. per gall.
 CREOSOTE.—Cresylic, 20/24%, 10d. to 11d. per gall.; middle oil, 8d. to 9d. per gall. Heavy, 8½d. to 9d. per gall. Standard specification, 7½d. to 7½d. ex works. Salty, 7d. per gall. less 1½%.
 NAPHTHA.—Crude, 9d. to 10d. per gall. Solvent 90/160, 9½d. to 10d. per gall. Solvent 95/160, 1s. 3d. to 1s. 4d. per gall. Solvent 90/190, 8½d. to 1s. 3d. per gall.
 NAPHTHALENE CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed or hot pressed, £8 per ton.
 NAPHTHALENE.—Crystals, £13 to £13 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.
 PITCH.—Medium soft, 85s. to 90s. per ton, f.o.b., according to district. Market firm.
 PYRIDINE.—90/140, 5s. 9d. to 6s. 6d. per gall. 90/180, 3s. 6d. to 5s. per gall. Heavy, 3s. to 3s. 6d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:
 ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
 ACID ANTHRANILIC.—6s. per lb. 100%.
 ACID BENZOIC.—1s. 9d. per lb.
 ACID GAMMA.—4s. 6d. per lb.
 ACID H.—3s. per lb.
 ACID NAPHTHIONIC.—1s. 6d. per lb.
 ACID NEVILLE AND WINTHER.—4s. 9d. per lb.
 ACID SULPHANILIC.—8½d. per lb.
 ANILINE OIL.—8d. per lb. naked at works.
 ANILINE SALTS.—8d. per lb. naked at works.
 BENZALDEHYDE.—2s. 3d. per lb.
 BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
 BENZOIC ACID.—1s. 8½d. per lb.
 o-CRESOL 29/31° C.—5½d. per lb.
 m-CRESOL 98/100%.—2s. 3d. to 2s. 5d. per lb.
 p-CRESOL 32/34° C.—2s. 3d. to 2s. 5d. per lb.
 DICHLORANILINE.—1s. 10d. per lb.
 DIMETHYLANILINE.—1s. 11d. per lb.
 DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.
 DINITROCHLOROBENZENE.—£84 per ton d/d.
 DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.
 DIPHENYLAMINE.—2s. 10d. per lb. d/d.
 a-NAPHTHOL.—2s. per lb. d/d.
 B-NAPHTHOL.—10d. per lb. d/d.
 a-NAPHTHYLAMINE.—1s. 3d. per lb.
 B-NAPHTHYLAMINE.—3s. per lb.
 o-NITRANILINE.—5s. 9d. per lb.
 m-NITRANILINE.—3s. per lb. d/d.
 p-NITRANILINE.—1s. 8d. per lb.
 NITROBENZENE.—6d. per lb. naked at works.
 NITRONAPHTHALENE.—1s. 3d. per lb.
 R. SALT.—2s. 2d. per lb.
 SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.
 o-TOLUIDINE.—8½d. per lb.
 p-TOLUIDINE.—2s. per lb. naked at works.
 m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.
 N. W. Acid.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £10 5s. per ton. Good demand.
 Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.
 CHARCOAL.—£6 to £9 per ton, according to grade and locality.
 Foreign competition severe.
 IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.
 RED LIQUOR.—9d. to 10d. per gall.
 WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.
 WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.
 WOOD TAR.—£4 to £5 per ton.
 BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.
 ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.
 BARYTES.—£3 10s. to £6 15s. per ton, according to quality.
 CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.
 CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.
 CARBON BLACK.—5½d. per lb., ex wharf.
 CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.
 CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.
 DIPHENYLGUANIDINE.—3s. 9d. per lb.
 INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.
 LAMP BLACK.—£35 per ton, barrels free.
 LEAD HYPOSULPHITE.—9d. per lb.
 LITHOPHONE, 30%.—£22 10s. per ton.
 MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.
 SULPHUR.—£9 to £11 per ton, according to quality.
 SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
 SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.
 THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.
 THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
 VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.
 ZINC SULPHIDE.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.
 ACID, ACETYL SALICYLIC.—2s. 3½d. to 2s. 5d. per lb.
 ACID, BENZOIC B.P.—2s. to 3s. 3d. per lb., according to quantity.
 Solely ex Gum, 1s. to 1s. 3d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 6½d. to 1s. 7d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.

ACID, SALICYLIC, B.P. PULV.—1s. 2½d. to 1s. 4½d. per lb.; Technical.—11½d. to 11¾d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 3½d. per lb., less 5%.

ACETANILIDE.—1s. 6d. to 1s. 9d. per lb. for quantities.

AMIDOL.—7s. 6d. to 9s. per lb., d/d.

AMIDOPYRIN.—8s. 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimed: 1s. per lb.

ATROPINE SULPHATE.—9s. per oz.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—10s. 4d. to 10s. 7d. per lb.

BISMUTH CITRATE.—9s. 10d. to 10s. 1d. per lb.

BISMUTH SALICYLATE.—8s. 10d. to 10s. 1d. per lb.

BISMUTH SUBNITRATE.—8s. 4d. to 8s. 7d. per lb.

BISMUTH NITRATE.—6s. 1d. to 6s. 4d. per lb.

BISMUTH OXIDE.—13s. 10d. to 14s. 1d. per lb.

BISMUTH SUBCHLORIDE.—13s. 10d. to 14s. 1d. per lb.

BISMUTH SUBGALLATE.—8s. 1d. to 8s. 4d. per lb. Extra and reduced prices for smaller and larger quantities respectively; Liquor Bismuthi et Ammon. Cit. B.P. in W. Qts. 1s. 1d. per lb.; 12 W. Qts. 1s. per lb.; 36 W. Qts. 11½d. per lb.

BORAX B.P.—Crystal, 25s. per cwt.; powder, 26s. per cwt. according to quantity. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 10½d. per lb.; sodium, 2s. 1d. per lb.; ammonium, 2s. 3d. per lb.; granulated, ½d. per lb. less; all spot. Large quantities at lower rates.

CALCIUM LACTATE.—1s. 2d. to 1s. 3½d. per lb.

CAMPOR.—Refined flowers, 2s. 11d. to 3s. 1d. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. 730.—1s. 1½d. to 10½d., drums; other gravities at proportionate prices.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—4s. 9d. to 5s. per lb.

HEXAMINE.—2s. 3d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 vols.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchester, 2s. 11d. per gal. B.P., 10 vols., 2s. to 3s. per gal.; 20 vols., 3s. to 4s. per gal.

HYDROQUINONE.—3s. 3d. to 3s. 6d. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE.—B.P., 2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy Commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.

MENTHOL.—A.B.R. recrystallised B.P., 17s. 3d. per lb. net; Synthetic detached crystals, 8s. 6d. to 12s. 6d. per lb., according to quantity; Liquid (95%), 11s. 3d. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10d. to 5s. 11d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 9d. per lb.

METHYL SULFONAL.—8s. 9d. to 9s. per lb.

METOL.—9s. to 11s. 6d. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb. Less in quantity.

PHENACETIN.—2s. 6d. to 2s. 9d. per lb.

PHENAZONE.—4s. to 4s. 3d. per lb.

PHENOLPHTHALEIN.—6s. 6d. to 6s. 9d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—96s. per cwt. less 2½%.

POTASSIUM CITRATE.—B.P.C., 1911: 1s. 8d. to 1s. 11d. per lb.; U.S.P.: 1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb. according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz. bulk in 100 oz. tins.

RESORCIN.—3s. 9d. to 4s. per lb., spot.

SACCHARIN.—55s. per lb.; in quantity lower.

SALOL.—2s. 4d. per lb.

SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923.—1s. 11d. to 2s. 1d. per lb. for 1-cwt. lots. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—90s. to 95s. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 7d. to 1s. 9d. per lb. Crystal, 1s. 8d. to 1s. 10d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.

SULFONAL.—6s. 9d. to 7s. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 2d. per lb.

THYMOL.—Puriss., 10s. to 10s. 3d. per lb., according to quantity. Firmer. Natural, 14s. 3d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—11s. per lb.

AMYL ACETATE.—2s. per lb.

AMYL BUTYRATE.—5s. 3d. per lb.

AMYL SALICYLATE.—3s. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. [per lb.]

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 6d. per lb.

CINNAMIC ALDEHYDE NATURAL.—16s. 6d. per lb.

COUMARIN.—10s. per lb.

CITRONELLOL.—13s. 3d. per lb.

CITRAL.—8s. 3d. per lb.

ETHYL CINNAMATE.—6s. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—8s. 6d. per lb.

GERANIOL (PALMAROSA).—17s. 9d. per lb.

GERANIOL.—6s. to 10s. per lb.

HELIOTROPINE.—4s. 9d. per lb.

ISO EUGENOL.—13s. per lb.

LINALOOL.—Ex Bois de Rose, 14s. per lb. Ex Shui Oil, 9s. 9d. per lb.

LINALYL ACETATE.—Ex Bois de Rose, 17s. 6d. per lb. Ex Shui Oil, 13s. 9d. per lb.

METHYL ANTHRANILATE.—8s. 6d. per lb.

METHYL BENZOATE.—4s. per lb.

MUSK KETONE.—35s. per lb.

MUSK XYLOL.—8s. per lb.

NEROLIN.—4s. 6d. per lb.

PHENYL ETHYL ACETATE.—12s. per lb.

PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.

RHODINOL.—31s. 6d. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 8d. per lb.

VANILLIN.—15s. 3d. to 16s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 11s. per lb.

ANISE OIL.—2s. 9d. per lb.

BERGAMOT OIL.—26s. per lb.

BOURBON GERANIUM OIL.—13s. per lb.

CAMPOR OIL.—9d. per lb.

CANANGA OIL, JAVA.—15s. 9d. per lb.

CINNAMON OIL LEAF.—6d. per oz.

CASSIA OIL, 80/85%.—7s. 3d. per lb.

CITRONELLA OIL.—Java, 1s. 9d. per lb., c.i.f. U.K. port for shipment over 1928. Ceylon, pure, 1s. 7d. per lb.

CLOVE OIL.—5s. per lb.

EUCALYPTUS OIL, AUSTRALIAN.—2s. 1d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, Esters, 17s. per lb.

LEMON OIL.—8s. 6d. per lb.

LEMONGRASS OIL.—4s. 6d. per lb.

ORANGE OIL, SWEET.—11s. 3d. per lb.

OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.

PALMA ROSA OIL.—10s. 3d. per lb.

PEPPERMINT OIL.—Wayne County, 15s. 9d. per lb.; Japanese, 8s. per lb.

PETITGRAIN OIL.—7s. 9d. per lb.

SANDALWOOD OIL.—Mysore, 26s. 6d. per lb.; 90/95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, December 8, 1927.

THE market position is almost the same as last week. There are no price changes of importance to record.

General Chemicals

ACETONE.—Price unchanged at £63 per ton with reductions for larger quantities.
ACID ACETIC is very firm, price unchanged at £37 to £38 per ton for 80%. Business good.
ACID CITRIC.—Unchanged.
ACID FORMIC continues in good demand, price very firm at £44 to £45 per ton.
ACID LACTIC.—Unchanged at £43 per ton.
ACID OXALIC remains firm and in good demand at £30 per ton.
ALUMINA SULPHATE is in good demand, price firm at £5 15s. per ton.
AMMONIUM CHLORIDE.—Unchanged at £19 per ton. Demand continues fair.
BARIUM CHLORIDE.—Unchanged at £8 10s. to £9 per ton.
COPPER SULPHATE.—Unchanged.
EPSOM SALTS.—Unchanged.
FORMALDEHYDE is in good demand and price remains unchanged at £41 10s. per ton.
LEAD ACETATE.—Unchanged at £43 10s. for white and 10s. per ton less for brown.
LIME ACETATE.—Unchanged.
METHYL ACETONE remains active at £54 to £55 per ton.
POTASSIUM CHLORATE is very firm and still in short supply.
POTASSIUM PERMANGANATE.—The price is about 5½d. to 5¼d. per lb.
POTASSIUM PRUSSIAN.—Demand continues fair at £59 per ton for quantities.

SODA ACETATE is in very short supply, price remains firm at £19 15s. to £20 per ton according to quantity.
SODA BICHROMATE.—Unchanged at 3¼d. per lb.
SODA CHLORATE also continues very firm at from £26 to £28 per ton, with good demand.
SODA NITRITE continues firm at £19 10s. to £20 per ton, demand is good.
SODA PRUSSIAN.—Firm at 4¼d. per lb.
SODA SULPHIDE.—Unchanged.
ZINC SULPHATE.—Unchanged.

Coal Tar Products

There is little change to report in the values of coal tar products from last week.
90's BENZOL remains unchanged at about 1s. 4d. to 1s. 5d. per gallon on rails, while the motor quality is quoted at 1s. 1¼d. to 1s. 2¼d. per gallon.
PURE BENZOL is worth about 1s. 6¼d. to 1s. 7d. per gallon, on rails.
CREOSOTE OIL is firm, and is quoted at about 7¼d. per gallon on rails in the North, while the price in London is about 8¼d. per gallon.
CRESYLIC ACID is unchanged, at about 2s. 2d. per gallon ex works for the pale quality 97/99%, while the dark quality 95/97% is worth about 1s. 11d. per gallon.
SOLVENT NAPHTHA is quoted at about 10d. per gallon on rails.
HEAVY NAPHTHA is unchanged, being worth about 11d. per gallon on rails.
NAPHTHALENES are steady, at about £6 15s. to £7 per ton for the 74/76 quality, and at about £8 to £8 15s. per ton for the 76/78 quality.
PITCH is quiet. To-day's value is about 85s. f.o.b. U.K. port.

Latest Oil Prices

LONDON, December 7.—LINSEED OIL steady. Spot, ex mill, £29; December, £28; January-April, £28 7s. 6d.; May-August, £29 5s. RAPE OIL, steady. Crude extracted, £44; technical refined, £46, naked, ex wharf. COTTON OIL quiet. Refined common edible, £42; Egyptian crude, £37; deodorised, £44. TURPENTINE inactive at 9d. per cwt. decline. American, spot, 36s. 6d.; January-April, 37s. 6d. per cwt.
HULL, December 7.—LINSEED OIL.—Spot and December, £28 17s. 6d. January-April, £29; May-August, £29 5s. per ton, naked. COTTON OIL.—Bombay crude, £32 10s.; Egyptian crude (new), £30 5s.; edible refined, £39 15s.; technical, £36 10s.; deodorised, £41 15s. per ton, naked. PALM KERNEL OIL.—Crushed, 5½ per cent., £39 per ton, naked. GROUNDNUT OIL.—Crushed-extracted, £46 10s.; deodorised, £50 10s. SOYA OIL.—Extracted and crushed, £35 10s.; deodorised, £39 per ton. RAPE OIL.—Crude-extracted, £43; refined, £45 per ton. TURPENTINE.—Spot, 39s. per cwt. CASTOR OIL.—Pharmaceutical, 52s. 3d.; first, 47s. 3d.; second, 45s. 3d. per cwt. in barrels. COD OIL unaltered.

Nitrogen Products

Export.—As the season advances, British producers are raising their prices, and the present price ranges from £9 11s. to £9 15s. per ton, f.o.b. U.K. port, in single bags. Although consumers in a good many countries have covered their requirements for the season, inquiries for small lots continue to reach London.

Home.—The home market continues sluggish, not only for sulphate of ammonia, but for other forms of nitrogen.

Nitrate of Soda.—The nitrate price remains at about 17s. per metric quintal, f.a.s. Chile. The demand is not strong at the moment, but, on account of the smallness of supplies available between now and March, it seems unlikely that prices should drop. Production continues to increase, and has now reached 160,000 tons monthly.

South Wales By-Products

WITH the end of the year in sight South Wales by-product activities have slackened off and buyers are showing a tendency to restrict purchases to the requirements of the moment. Pitch is quiet, and is unlikely to have a good demand for some time to come. Prices are unchanged from 77s. 6d. to 82s. 6d. per ton. There is very little call for crude naphthalene, which ranges from £4 10s. to £5 per ton, while crude tar has only a moderate demand at 60s. to 65s. per ton. Refined tars have a quiet, but steady, demand, coke oven tar selling at 8¼d. to 9d. a gallon, and gasworks tar at 7d. to 7¼d. a gallon, f.o.r. makers' works, and 10d. to 1s. delivered in barrels. Solvent naphtha remains quiet, with prices ranging at 10d. to 1s. 0½d. a gallon, f.o.r. makers' works. Patent fuel and coke are unchanged, but the export prospect is brightening.

Patent fuel prices range from 23s. to 24s. a ton; coke from 27s. 6d. to 37s. 6d. Patent fuel exports from all the South Wales ports during the four weeks ending November 29 amounted to 95,910 tons. Coke exports over the same period amounted to only 4,625 tons. Oil imports into Swansea during the four weeks amounted to 20,088,420 gallons.

The South American Handbook, 1928

THE 1928 edition of *The South American Handbook*, the fifth of the series, has just been issued (South American Publications, Ltd., pp. 673, 2s. 6d.). It is a guide to the countries and resources of Latin-America, including South and Central America, Mexico, and Cuba. Notes are given in each case of cities, hotels, physical features, climate, agricultural resources, livestock, mineral wealth, foreign trade, national debt, industrial development, laws, etc., currency, posts and telegraphs, and much other information. A special section deals with the products of South America, and there are also other individual sections dealing with books on South America, steamship facilities, banking facilities, and railways.

Meeting of Society of Glass Technology

THE meeting of the Society of Glass Technology at Stourbridge began on the evening of Tuesday, November 22, when Prof. W. E. S. Turner gave a popular lecture on "Modern Artistic Glass." The chairman, Mr. Walter Butterworth, Senr., M.A. (president of the Society), commented on Professor Turner's remarks so felicitously that he was invited to give a lecture himself, to deal more particularly with stained glass. On Wednesday, November 23, Mr. M. H. Edwards read a paper on "Stourbridge Fireclays and the Manufacture of Glass House Pots," and Professor W. E. S. Turner one on "Glass Pot Manufacture in Great Britain."

Pacific Phosphate Resources

THE Unionist Agricultural Committee has adopted the report of the sub-committee which considered the proposals made by Mr. Briggs, M.P., as to the phosphate deposits on the Pacific islands of Nauru and Ocean. The sub-committee recommended that the Government be asked to instruct its Commission, in association with the Commissions of Australia and New Zealand, thoroughly to investigate the costs and to report what in their opinion would be the lowest possible f.o.b. cost price per ton of these phosphates, calculated upon an output of 1,000,000 tons every year.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, December 7, 1927.

THE heavy chemical market has during the past week continued to show moderate activity, the bulk of inquiry, however, being for forward delivery over next year. There is no important change in price for material for this year's delivery.

Industrial Chemicals

ACETONE, B.G.S.—Quoted £59 to £62 per ton, ex store, according to quantity.

ACID, ACETIC.—98/100%, glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80%, pure, £37 10s. per ton, ex wharf; 80%, technical, £37 10s. per ton, ex wharf.

ACID, BORIC.—Crystals, granulated or small flakes, £30 per ton; powdered, £32 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Quoted 7½d. per lb., f.o.r. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Quoted 1s. 6½d. per lb., less 5%, ex wharf.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. 9d. per carboy. Dearsenicated quality, 6s. 3d. per carboy, ex works.

ACID NITRIC, 80%.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer from the Continent at 3½d. per lb., ex wharf. Spot material quoted 3½d. per lb., ex store. In better demand.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Still in little demand but price unchanged at 1s. 2½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material quoted £5 12s. 6d. per ton, ex store. On offer for early delivery at £5 5s. per ton, c.i.f. U.K. ports.

ALUM POTASH.—Lump quality quoted £8 5s. per ton, c.i.f. U.K. ports; crystal meal, 10s. per ton less. Lump quality on spot offered at £9 per ton, ex store.

AMMONIA, ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture unchanged at £23 to £24 per ton, ex station. Continental on offer at £19 15s. per ton, c.i.f. U.K. ports. Fine white crystals quoted £17 10s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Spot material on offer at £21 per ton, ex store. Quoted £20 per ton, ex wharf, for prompt despatch from mines.

BARIUM CARBONATE, 98/100%.—English material on offer at £7 5s. per ton, ex station. Continental quoted £7 per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £6 17s. 6d. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Contract price to consumers, £8 per ton, ex station, minimum 4-ton lots. Spot material 10s. per ton extra. Continental now offered at about £7 per ton, ex wharf. A reduction in price of British material of about £1 per ton is anticipated for next year.

BORAX.—English manufacturers' prices unchanged as follows: Granulated £19 10s. per ton; crystals, £20 per ton; powdered, £21 per ton. Odd parcels of granulated on offer from America at about £16 per ton, ex wharf.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 to £5 5s. per ton, ex station, with a slight reduction for contracts. Continental now on offer at £3 10s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—Continental material quoted £23 per ton, c.i.f. U.K. ports. British on offer at £24 per ton, ex store.

FORMALDEHYDE, 40%.—On offer at £37 5s. per ton, c.i.f. U.K. ports. Spot material quoted £39 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at about £28 per ton, ex store.

LEAD, WHITE.—Quoted £28 10s. per ton, ex store.

LEAD ACETATE.—White crystals quoted £39 15s. per ton, c.i.f. U.K. ports; brown about £38 10s. per ton, c.i.f. U.K. ports. Spot material on offer at £42 15s. per ton, ex store, spot delivery.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH, CAUSTIC, 88/92.—Solid quality quoted £28 15s. per ton, c.i.f. U.K. ports, minimum 15-ton lots. Under 15-ton lots, £29 10s. per ton. Liquid, £15 per ton, minimum 15-ton lots. Under 15-ton lots, £15 7s. 6d. per ton, c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered. Price from January 1, 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Rather scarce for immediate delivery. Quoted £25 10s. per ton, ex wharf. Spot material about £26 10s. per ton, ex store.

POTASSIUM CHLORATE, 99/100%.—On offer from the Continent at £25 10s. per ton, c.i.f. U.K. ports for powdered quality. Crystals, 30s. per ton extra.

POTASSIUM NITRATE.—Quoted £20 per ton, c.i.f. U.K. ports. Spot material available at £21 per ton, ex store.

POTASH PERMANGANATE, B.P. CRYSTALS.—Quoted 6½d. per lb., ex store, spot delivery.

POTASSIUM PRUSSIAN (YELLOW).—Unchanged at about 6½d. per lb., ex store, spot delivery. Offered from the Continent at 6½d. per lb., ex wharf.

SODA CAUSTIC.—Powdered, 98/99%, £19 7s. 6d. per ton; 76/77%, £15 10s. per ton; 70/72%, £14 10s. per ton, carriage paid station, minimum 4-ton lots on contract. Spot material 10s. per ton extra. A reduction on the basis of £1 per ton for the higher strength is anticipated for next year.

SODIUM ACETATE.—In good demand and still scarce for prompt delivery. Quoted £18 5s. per ton, c.i.f. U.K. ports. British material quoted £22 per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Price for delivery this year 3½d. per lb. delivered buyers' works. From January 1, 3d. per lb., delivered buyers' works, minimum 2-ton lots. Smaller quantities 1½d. per lb. extra.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, 27s. 6d. per ton extra; alkali, 58%, £8 10s. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 10s. per ton, ex store, minimum 4-ton lots. Continental on offer at about £8 2s. 6d. per ton, ex wharf, prompt shipment; pea crystals of British manufacture quoted £15 5s. per ton, ex station, 4-ton lots.

SODIUM NITRITE, 100%.—Quoted £19 10s. per ton, ex store.

SODIUM PRUSSIAN (YELLOW).—In moderate demand and price unchanged at about 4½d. per lb., ex store. Offered for prompt shipment from the Continent at 4½d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Prices for home consumption, £3 7s. 6d. per ton, ex works.

SODIUM SULPHIDE.—Manufacturers advise an appreciable reduction in price for next year. Present prices for English material are as follows:—60/62% solid, £10 10s. per ton; broken, £11 10s. per ton; flakes, £13 5s. per ton. Crystals, 31/34%, £7 10s. per ton to £8 5s. per ton, according to quality, delivered your works, minimum 4-ton lots on contract. Prices for spot delivery 5s. per ton higher for solid, 2s. 6d. per ton for crystals. Offered from the Continent at about £9 5s. per ton, c.i.f. U.K. ports. Broken, 15s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock, £10 12s. 6d. per ton; floristella, £9 10s. per ton; ground American, £9 5s. per ton, ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid, on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports. Powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material quoted £11 15s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Intermediates

2.R. ACID.—10s. 9d. per lb., 100%. Small inquiries.

J. ACID.—5s. 6d. per lb. Small inquiries.

PARANITRANILINE.—1s. 7½d. per lb. Some inquiries.

ALPHA NAPHTHYLAMINE.—1s. 3d. per lb. Some inquiries.

BETA NAPHTHOL.—10d. per lb. Some inquiries.

ORTHOTOLUIDINE.—7½d. per lb. Some inquiries.

Liquid Oxygen in Germany

THE I.G. Farbenindustrie A.-G. and the Gesellschaft für Linde's Eismaschine A.-G. are concerned at the moment with the introduction of a new process for the production of liquid oxygen, which in many cases offers advantages and economies to the users of oxygen. The process and the necessary plant are protected by patent, the two above-mentioned firms being the sole licensees for Germany.

Manchester Chemical Market

[FROM OUR OWN CORRESPONDENT.]

Manchester, December 8, 1927.

CONSIDERING the fact that the markets seem already to be coming within the shadow cast by the approaching Christmas holidays, the volume of business in heavy chemicals that has been put through on the Manchester market during the past week has been on a not unsatisfactory scale, although the expectations are that within another week from now, the interest of consumers will have evaporated until, at all events, there is a settling down after the New Year. Actual business during the past week has largely been a question of small "spot" parcels, though interest in forward positions is growing apace.

Heavy Chemicals

Phosphate of soda has been in moderate request and quotations for this material are steady at up to £12 15s. per ton. Bicarbonate of soda also is unchanged in price, and a quiet trade is being transacted. Buying interest in sulphide of sodium has been on the slow side, with the commercial product offering at about £8 10s. per ton, and the 60-65 per cent. concentrated solid at £9 15s. The tendency in the case of bichromate of soda seems to be towards somewhat higher levels, 3½d. per lb. now being quoted; inquiry is on a fair scale. So far there has been no change in the price position of caustic soda, and a quietly steady business is being done at the range of £14 10s. to £16 10s. per ton, according to quality. A moderate inquiry has been reported in the case of saltcake at about £3 10s. per ton, with glauber salts slow though unchanged in price at about £3 5s. Chlorate of soda seems still to be on the slow side; values, however, are held at 2½d. per lb. The demand for hyposulphite of soda is on quiet lines, with photographic quality on offer at from £16 10s. to £16 15s. per ton and commercial at £9 10s. Prussiate of soda meets with a moderate inquiry at up to 4½d. per lb. Alkali is well held at about £6 15s. per ton, and a fairly good business in this material is reported. Nitrite of soda, also, is moving off in moderate quantities at from £19 to £19 5s. per ton.

The potash section of the market seems to keep steady pretty well all round. Permanganate of potash is probably the outstanding exception, and lower prices are now being indicated in respect of this material, B.P. quality offering at round 5½d. per lb., and commercial at 5d. There is a fair inquiry about for caustic potash at £30 to £31 per ton, and the same may be said with regard to carbonate of potash, offers of which are at round £26 5s. per ton. There is not a great deal of buying interest at the moment in chloride of potash, but quotations for this are held at about 2½d. per lb. Bichromate of potash keeps steady at 4½d. per lb., and meets with a moderate demand. The call for yellow prussiate of potash is on quiet lines at round 6½d. per lb.

Arsenic keeps up fairly well at £18 per ton at the mines for white powdered, Cornish makes, and a moderate business is being put through. Sulphate of copper meets with a quiet demand, and at about £24 per ton, f.o.b., rather lower prices are being indicated. There is only a moderate movement in the case of nitrate of lead, but values are held at £38 per ton. A further firming up is to be noted in the acetates of lead, white being now about £41 10s. per ton, and brown £39 15s. The advance in acetate of lime appears to have stopped for the time being, but with offers still on the short side values are about held at last week's level of £16 10s. per ton for grey, and £10 10s. for brown.

Acids and Tar Products

Oxalic acid is a steady section at from 3½d. to 3½d. per lb., and a moderate demand has been reported. There is not much stirring in tartaric acid, however, though offers are still at about 1s. 2½d. per lb. Citric acid is characterised by distinct firmness and from 1s. 6½d. to 1s. 7d. per lb. is being asked. Acetic acid is a quietly steady trade at £66 to £67 per ton for glacial, and about £37 for the 80 per cent. commercial.

Pitch is being quoted this week on an f.o.b. basis of round £4 5s. per ton, a moderate business being done. Creosote oil is firm at up to 8d. per gallon on a steady demand for this material. Carbollic acid is quiet at about 7½d. per lb. for crystals, and 2s. 4d. per gallon for the crude quality. There is not much stirring in the case of solvent naphtha, but prices are still at about 11½d. per gallon.

Key Industry Duty on Chemicals

Inquiry into Calcium Biphosphate

THERE will be a hearing on Tuesday, January 17, of the complaint which the Board of Trade have received under Section 1 (5) of the Safeguarding of Industries Act, 1921, that calcium biphosphate (baking powder quality) has been improperly excluded from the list H ii, of articles chargeable with duty under Part I of that Act, as amended by Section 10 of the Finance Act, 1926.

The hearing will take place at 11 a.m. in the main conference room, Board of Trade, Great George Street, London, S.W.1, and the tribunal will consist of Mr. A. A. Hudson, K.C., the referee, and Professor F. G. Donnan, F.R.S., and Professor J. F. Thorpe, F.R.S., who have been selected by the Lord Chancellor for the purpose of this arbitration from the panel constituted under Section 10 (4) of the Act of 1926.

Expiry of Exemption Orders

THE question of renewing Exemption Orders Nos. 1, 2, 3, and 4, which are due to expire on March 6, 1928, is now under consideration by the Board of Trade. The articles covered by these exemption orders are as follows:—R Acetone, Acetone fermentation, Acetone synthetic, Acid oxalic, Amidopyrin, Ammonium perchlorate, Barbitone, Dial, Didial, Elbon, Ethylene bromide, Ethylene glycol, Furfural, Glycol ethers, Guaiacol carbonate, Hydroquinone, Integrators (planimeter type), R Lead acetate, Lead tetra-ethyl, Lipiodin, Methyl sulphonal, Phenacetin, Phenazone, Phytin, Piperazine, Planimeters, R Potassium hydroxide, Potassium guaiacol sulphonate, Pyramidon-veronal, Salol, Sulphonal, and Urea. Any communications with respect to any of the above-mentioned articles should be addressed, before January 8, 1928, to the principal assistant secretary, Industries and Manufactures Department, Board of Trade, Great George Street, Westminster, London, S.W.1.

Chemical Engineering Group in Liverpool

ATTENTION may be drawn to an important meeting to be held jointly by the Chemical Engineering Group and the Liverpool Section of the Society of Chemical Industry, on Friday, December 16, 1927. The following attractive programme has been arranged:—The party will forgather at 2.30 p.m. at the North-Western Hotel, adjoining Lime Street Station, Liverpool, for conveyance to the Liverpool Docks, where, by the kindness of Elder Dempster and Co., Ltd., a visit will be paid to the s.s. *Adda*, a Diesel-engined vessel. Tea will subsequently be served in the Chemistry Department's Library at the University. At 6 p.m. the joint meeting will be held in the Electricity Lecture Theatre of the University, when Mr. C. S. Garland, a former chairman of the Chemical Engineering Group, will deliver a paper on "Oil Pollution of Seas and Harbours—and a Remedy." The paper will be illustrated by lantern slides and a cinematograph film of a prolonged test carried out by H.M. Admiralty. The proceedings will conclude with an informal dinner (cost, 5s., exclusive of wines) to be held at the University Club. The arrangements for the dinner, as well as for the rest of the meeting, are in the hands of Mr. E. Gabriel Jones, the honorary secretary of the Liverpool Section of the Society of Chemical Industry, to whom any inquiries should be addressed.

Cement Products and Finance Co.: Annual Meeting

THE annual general meeting of the British Cement Products and Finance Co., Ltd., was held on Tuesday, Mr. H. S. Horne (chairman of the company) presiding. In moving the adoption of report and accounts, he said that the total profit from the first year's operations amounted to £124,753. It was proposed to declare a dividend of 15 per cent. on the Ordinary shares, plus a bonus of 1s. per share, with a dividend of 95 per cent. and a bonus of 11½d.—a further 95 per cent.—on the Deferred shares, leaving £14,780 to be carried forward. That was a satisfactory start, which had justified the creation of the British Cement Products and Finance Co.

The directors had decided to ask the sanction of the shareholders to increase the authorised capital from £200,000 to £500,000. The report and accounts were adopted.

Company News

ASBESTOS CORPORATION OF CANADA.—A quarterly dividend of 1½ per cent. is announced on the preferred stock.

LEEDS FIRECLAY CO.—The report for the twelve months ended June 30 last states that the accounts show a profit of £42,887, against £50,209 for the previous year.

CELANESE CORPORATION OF AMERICA.—A semi-annual dividend of 3½ per cent. on the 7 per cent. cumulative first participating preferred stock has been declared. Total dividends declared during the current year amount to 19½ per cent. on this stock.

CONSETT IRON CO.—The directors announce that after providing for debenture interest, but not for depreciation, there is a profit for the half-year ended September 30. Having regard, however, to present uncertain condition of trade, they do not feel justified in the payment of any interim dividend.

NEW TAMARUGAL NITRATE CO.—The net profit for the year ended July 31 last amounted to £42,697, compared with £34,299 for the preceding year, to which is added £69,806 brought forward. After providing for service of income bonds, a balance of £110,664 remains, which it is proposed to carry forward. In the previous year £17,307 was placed to reserve, and a capital bonus of 100 per cent. was distributed in addition to a dividend of 5 per cent.

WEARDALE STEEL, COAL AND COKE CO.—For the year ended September 30 last, the report states that the profit, including interest on investments, and after providing for all accrued liabilities, is £59,830, which together with £46,256 brought forward, makes a total of £106,086. Interest on 4 per cent. debenture stock takes £11,492, and after allowing for preferred ordinary dividend, directors propose a dividend of 6 per cent. per annum on deferred ordinary shares for year, placing to reserve account for general purposes, including depreciation, £20,000, and carrying forward £31,094. The annual meeting will be held in Newcastle-on-Tyne on December 15, at 11.30 a.m.

VENESTA, LTD.—The net amount at the credit of the profit and loss for the year ended June 30, 1927, is £36,506, and the balance brought forward from June 30, 1926, is £70,588, making £107,094. The dividend on the 7 per cent. cumulative preference shares paid and accrued to June 30, 1927, absorbs £28,000, leaving £79,094, which it is proposed to carry forward. The directors regret that after paying the debenture interest and the preference dividend, the profit for the year does not permit of the payment of a dividend on the ordinary share capital. The profits have suffered from severe competition due to over-production abroad, which has also involved loss by depreciation in the values of stocks. The annual meeting will be held at 2, Idol Lane, London, E.C., on December 15, at 12 noon.

Glauber's Salt Production in Saskatchewan

THE Whiteshore Salts and Chemical Co. intends to establish at Palo, Saskatchewan, a drying plant for the dehydration of the natural sodium sulphate salts, of which one of the largest deposits in the world is situated in that district. The establishment of a straw paper industry in Western Canada is expected to prove an additional outlet for the product. The utilisation of the Glauber's salt or sodium sulphate deposits of Saskatchewan is a new venture, and already the Palo Co. has shipped out 3,000 tons of crystals, mostly to the nickel industry of Sudbury and the textile industries of Quebec. Large quantities are used in the manufacture of sulphate wood pulp. It is expected that the erection of a dehydration plant at a cost of \$100,000 and the marketing of the salts in a dry form will greatly increase demand. Experts estimate the deposits at 20 million tons, with a rebirth of crystallisation amounting to 4 million tons annually.

Reward for Carbon Monoxide Detection Apparatus

MR. L. O. NEWTON, managing director of Sofnol, Ltd., writes as follows: "In your issue of December 3, on page 510, you state that the Royal Society for the Protection of Birds is offering £100 for the invention of a portable apparatus for the detection of small quantities of carbon dioxide in the mines. We would draw your attention to the fact that the reward is offered for an apparatus for detecting carbon monoxide, and not carbon dioxide."

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks should be lodged up to January 7, 1928.

BITRATED.

485,398. Class 3. Chemical substances prepared for use in medicine and pharmacy. International Chemical Co., Ltd., The Factory, Braydon Road, London, N.16; manufacturing chemists. November 1, 1927. (To be Associated. Sect. 24.)

BITRATE.

485,399. Class 3. Chemical substances prepared for use in medicine and pharmacy. International Chemical Co., Ltd., The Factory, Braydon Road, London, N.16; manufacturing chemists. November 1, 1927. (To be Associated. Sect. 24.)

SCLERADIUM.

484,678. Class 3. Chemical substances prepared for use in medicine and pharmacy. Richard Hoffbauer, Leipzigerstrasse 74, Berlin, S.W.19, Germany; manufacturer. October 6, 1927.

LEUKOFIX.

482,340. Class 4. Heavy spar in powder and paste form for use in manufactures. Gewerkschaft Auguste (a mining association incorporated under the laws of Germany), Leutnitz bei Rottenbach, Thüringen, Germany; manufacturers. July 11, 1927.

HALOWAX.

478,872. Class 4. Naphthalene, being a raw or partly prepared substance for use in the manufacture of chlorine substitution products. Halowax Corporation (a corporation organised under the laws of the State of New York, United States of America), 247, Park Avenue, City and State of New York, United States of America; manufacturers. March 16, 1927.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

PROPRIETARY CHEMICAL LINES.—An Australian firm has recently established a London house, and desires to act as factory or manufacturers' representatives for proprietary chemical lines. Replies should be addressed in the first instance to the Commercial Officer, Australia House, London, Strand, W.C.2, quoting Reference No. 498.

SALT IN BULK.—A well-established European firm in India and Burma with offices at Bombay, Rangoon, etc., are prepared to undertake the agencies of British manufacturers. (Reference No. 466.)

Tariff Changes

AUSTRALIA.—Amendments of the Commonwealth Tariff relating to glucose, chemicals for use in fire extinguishers, and fluorspar are contained in the *Board of Trade Journal* for December 1, 1927.

ROUMANIA.—Under the terms of a recent Customs circular order, the export of crude petroleum, including debenzinised, and zinc in any form is prohibited, and salts and alloys of platinum and silver, sulphate of copper, lead, nickel, bronze, and explosives may be exported only under Special Permit from the Ministry of Industry and Commerce.

UNITED STATES.—The import duty on crude magnesite has been increased from ½ cent per pound to ¾ cent per pound, and the duty on caustic calcined magnesite has been increased from ¾ to 1½ cent per pound under the Flexible Tariff provisions. The duties come into force on December 10.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

CROWTHER, W. H. (trading as SENSOMA CO.), 100, Turnpike Lane, Hornsey, N., patent cleanser manufacturer. (C.C., 10/12/27.) £20 15s. 3d. October 31.

MALCOMSON'S, 100, George Street, Portman Square, W. dyers. (C.C., 10/12/27.) £38 3s. 10d. October 29.

MIDDLESEX VARNISH CO., 4, Dale End, Birmingham, varnish manufacturers. (C.C., 10/12/27.) £15 3s. 3d. October 17.

Deed of Arrangement

HORNER, Charles Robert, trading as CHAS. R. HORNER AND CO., 4, Cankerwell Lane, Leeds, and residing at Oakwood House, Claremont Grove, Headingley, manufacturing chemist. (D.A., 10/12/27.) Dated November 24; filed December 1. Trustee, A. Walton, 7, Bond Place, Leeds, C.A. Secured creditors, £600; liabilities unsecured, £6,184; assets, less secured claims, £3,071.

Bill of Sale

HUTCHINSON, William, 35, Haringey Park, Crouch End, wholesale chemist. (B.S., 10/12/27.) Dated November 23. Filed November 29. £100.

Receiverships

HYGIENIC PEROL CO., LTD. (R., 10/12/27.) W. C. Todd, C.A., of 3, Cannon Street, E.C., was appointed receiver on November 25, 1927, under powers contained in debenture dated February 13, 1925.

PHILLI-MIRANO (1926), LTD. (R., 10/12/27.) H. M. Brand, 1, Museum Street, W.C.1, ceased to act as receiver and manager on November 4, 1927.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]

MARLEY HILL CHEMICAL CO., LTD., Newcastle-on-Tyne. (M., 10/12/27.) Registered November 24. £6,000 debentures, part of £100,000; general charge. *£10,000. December 30, 1926.

Satisfactions

BRITISH CELANESE, LTD. (late BRITISH CELLULOSE AND CHEMICAL MANUFACTURING CO., LTD., AND BRITISH CELLULOSE AND CHEMICAL MANUFACTURING (PARENT) CO., LTD.), London, S.W. (M.S., 10/12/27.) Satisfaction registered November 29, £286,000, part of amounts registered July 18, 1921, July 28 and 29, 1921, and November 1 and 9, 1921.

HOLDENWOOD BLEACHING CO., LTD., Haslingden. (M.S., 10/12/27.) Satisfaction registered November 28, £2,000, registered March 18, 1920.

London Gazette, &c.

Notice of Dividend

MARKHAM, James Hanby, trading as WATSON, WALKER AND QUICKFALL, at Sheepscar Chemical Works, Leeds, manufacturing chemists and drysalters, and also trading as A. J. Barbour and Co., at Sheepscar Chemical Works, Leeds, as horticultural chemist. First and final dividend, 1s. 6½d. per £, payable December 21, Pearl Chambers, East Parade, Leeds.

New Companies Registered

THE ASSOCIATION OF SPECIAL LIBRARIES AND INFORMATION BUREAUX, 38, Bloomsbury Square, London. Registered on November 30 as a company limited by guarantee, not having a share capital, with an unlimited number of members, each liable for two guineas in the event of winding up. The objects are to take over the property belonging to and undertake all or any of the engagements and liabilities of an unincorporated association known as the Association of Special Libraries and Information Bureaux, of 38, Bloomsbury Square, London, W.C. The management is vested in a council. The directors include:—J. G. Pearce, British Cast Iron Research Association; F. W. Clifford, Librarian, Chemical Society; Sir Richard Gregory; L. J. Honeyburn, Librarian, Imperial Chemical Industries, Ltd.; S. S. Hutton, director of British Non-Ferrous Metals Research Association; Lt.-Col. E. L. Johnson, R.E., Cleveland Scientific and Technical Institute; A. F. Ridley, British Non-Ferrous Metals Research Association; G. B. Willey, Librarian, Hadfield, Ltd.; J. C. Withers, British Cotton Industry Research Association.

THE BRUNNER INVESTMENT TRUST, LTD., 24, Old Broad Street, London. Registered as a "public" company on December 3. Nom. capital, £500,000 in £10 shares. The objects are to acquire and hold shares, stock, bonds, obligations, debentures, debenture stock, scrip and securities, to act as trustees, etc. Directors: Sir J. F. Brunner, R. L. Benson, F. J. M. Brunner.

THE FARNLEY IRON CO. (FIRECLAY WORKS), LTD., Fireclay Works, Farnley, Leeds. Registered as a private company on November 30. Nom. capital, £100,000 in £1 shares. Manufacturers of and dealers in firebricks, furnaces and other linings, bricks, tiles, smelters, metal workers, manufacturers of and dealers in chemicals, manures, dyes, lime, cement, mortar, concrete and building materials.

NATIONAL CHEMICAL HOLDINGS, LTD. Registered in Guernsey on November 26. Nom. capital, £250,000 in ordinary shares of £1 each. The company takes power to carry on the business of chemists, druggists, drysalters, perfumiers, oil and colourmen, collectors of flowers and perfume producing vegetables, importers and manufacturers of and dealers in pharmaceutical, medicinal, chemical, industrial and other preparations, etc. A director: The Rt. Hon. Earl of Westmorland, 60, Great Cumberland Place, London, W.1.

JOHN SCOTT AND CO. (LONDON), LTD., 49, Old Bond Street, London, W.1. Registered December 1. Nom. capital, £5,000 in £5 shares (400 "A" and 600 "B"). To acquire the business of a manufacturer and vendor of a preparation called "Synot," carried on by J. Scott as "Scott and Co." and to carry on the business of manufacturing and retail chemists.

Benn Brothers' Other Journals

THE CABINET MAKER.—Textiles in furnishing; Inside of a Matress—XXXVII; Scottish Benevolent Association Dinner.

THE ELECTRICIAN.—"Electrical Equipment of Electric Road Vehicles," by L. W. de Grave; "Reducing Shunts for Electrical Networks," by T. G. Hodgkinson; "Broadcasting Programmes and Trade," by A. J. Smith.

THE FRUIT GROWER.—"New Pest of Chrysanthemums," by E. R. Speyer; National Mark for Italian Oranges; Trade Exhibits at Smithfield Show.

GARDENING ILLUSTRATED.—A Plea for Single Flowers; "An Amateur's Apples," by W. F. R. Copeland; "Flowering Bulbs for an Unheated Greenhouse," by Norman Hadden; Mushrooms and How to Grow Them.

THE GAS WORLD.—"Dry Oxide Purification," by J. W. Thompson; Notes at Commercial Motor Exhibition; "Capital Charges and Reserves," by "A Secretary."

THE HARDWARE TRADE JOURNAL.—Household Appliances: the Growth of a New Industry; Hardware Dealers and their Christmas Window Displays; Students' Notebook: Display Window Dressing and Ticket Writing; Monthly Metal Prices Chart.

THE TIMBER TRADES JOURNAL.—Timber Trade Lecture: Timber and How It Grows; Liverpool Timber Traders at Dinner; Mass Production and Special Machines.

